

EXHIBIT 52

Exhibit 1 - Fiscal Plan (PREPA) (As of August 1 2018)



**Puerto Rico
Electric Power
Authority**

Puerto Rico Electric Power Authority

Fiscal Plan - August 1, 2018

PREPA Introduction (1/2)

- **Puerto Rico's future economic growth and vitality depends on affordable and reliable power.** For too long, electricity provided by PREPA has been expensive and unreliable. PREPA's problems were made incalculably larger by Hurricanes Irma and Maria, which leveled PREPA's infrastructure and knocked out all electricity across the Island and left thousands without power for several months. The New Fiscal Plan for PREPA provides a roadmap to shedding this history and emerging from these storms by creating a new power sector for Puerto Rico that will: provide electricity below 20 c/kWh; deliver low-cost, clean, and resilient power; rebuild and maintain a modern, reliable grid; implement operational efficiencies to lower cost and improve service; and establish a fiscally responsible entity.
- **PREPA must change drastically.** PREPA's power generation infrastructure is aging and inefficient. The transmission and distribution grid is fragile and severely storm-damaged. Operations are inefficient and unresponsive. Electricity is provided at a high cost and is unreliable. Debt proceeds were used to subsidize shortcomings instead of used to invest in modernization. Responses to Hurricanes Irma and Maria fell far short of what customers expected and deserved. Summed together, it is clear that Puerto Rico needs a comprehensive power sector transformation.
- **The New Fiscal Plan provides the framework for the myriad negotiations and processes that must occur for the successful transformation of PREPA.** The New Fiscal Plan includes a set of aspirational rate and reliability targets that set the parameters for funding and transformation processes that can no longer be delayed, including near term investments in restoration, generation and resiliency; the scope and focus of federal funding; and the funding and/or size of a transition charge available for restructuring debt and pension liabilities. The New Fiscal Plan also clarifies the roles and responsibilities of various stakeholder groups in driving forward the transformation of PREPA as well as the specific processes that are integral to such a transformation, such as the IRP, the Title III plan of adjustment, and the transaction.

PREPA Introduction (2/2)

Elements of a comprehensive power sector transformation

- *Restructuring power generation:* The New Fiscal Plan outlines possible paths to make generation cheaper, cleaner, and more reliable by shifting to a least-cost generation model, expanding distributed energy resources, modernizing baseload generation facilities, moving more generation closer to load, and reducing exposure to commodity price volatility.
- *Rebuilding and modernizing the grid:* Puerto Rico needs an upgraded grid to increase reliability and resiliency, reduce cost, facilitate distributed generation and microgrids, and allow for better monitoring and control. While the Federal Government is working to repair and restore the grid after it was destroyed by Hurricanes Irma and Maria, it must not be rebuilt to its legacy state. Rather, the grid must be hardened and modernized.
- *Transforming operations:* PREPA must transform its operations to become cash flow positive by Q1FY19 and meet the rate and reliability targets set forth in the New Fiscal Plan. This means making improvements in billing, collections, fuel management, procurement, labor costs, and budgeting.
- *Capital investment:* The New Fiscal Plan provides for an approximately \$12 billion capital investment program over the next five years to help achieve the goals of low-cost, reliable, and resilient power. Funding is proposed through a combination of federal funding, private investment, and rates. Historically, PREPA has not efficiently or effectively executed capital projects. To make the most of this funding, the transformation of PREPA also calls for new, private sector operators of the grid and generation assets.
- *A new industry structure:* Transforming the power sector requires overhauling the structure and management of PREPA. The New Fiscal Plan lays out one approach, which is attracting a private sector concessionaire to manage the grid while privatizing generation. The eventual details of the transaction to effect the transformation will be determined through a competitive auction process through which the market and public will be able to provide proposals and input. No matter the industry structure, the regulator must be robust, independent, well-funded, and expert.

Disclaimer

- The Financial Oversight and Management Board for Puerto Rico (the “FOMB,” or “Oversight Board”) has formulated this New Fiscal Plan based on, among other things, information obtained from the Puerto Rico Fiscal Agency and Financial Advisory Authority (“AAFAF”) and the Puerto Rico Electric Power Authority (“PREPA” and together with AAFAF, the “Government”).
- This document does not constitute an audit conducted in accordance with generally accepted auditing standards, an examination of internal controls or other attestation or review services in accordance with standards established by the American Institute of Certified Public Accountants or any other organization. Accordingly, the Oversight Board cannot express an opinion or any other form of assurance on the financial statements or any financial or other information or the internal controls of the Government and the information contained herein.
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- This New Fiscal Plan is based on what the Oversight Board believes is the best information currently available to it. To the extent the Oversight Board becomes aware of additional information after it certifies this New Fiscal Plan that the Oversight Board determines warrants a revision of this New Fiscal Plan, the Oversight Board will so revise it.

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PREPA Executive Summary

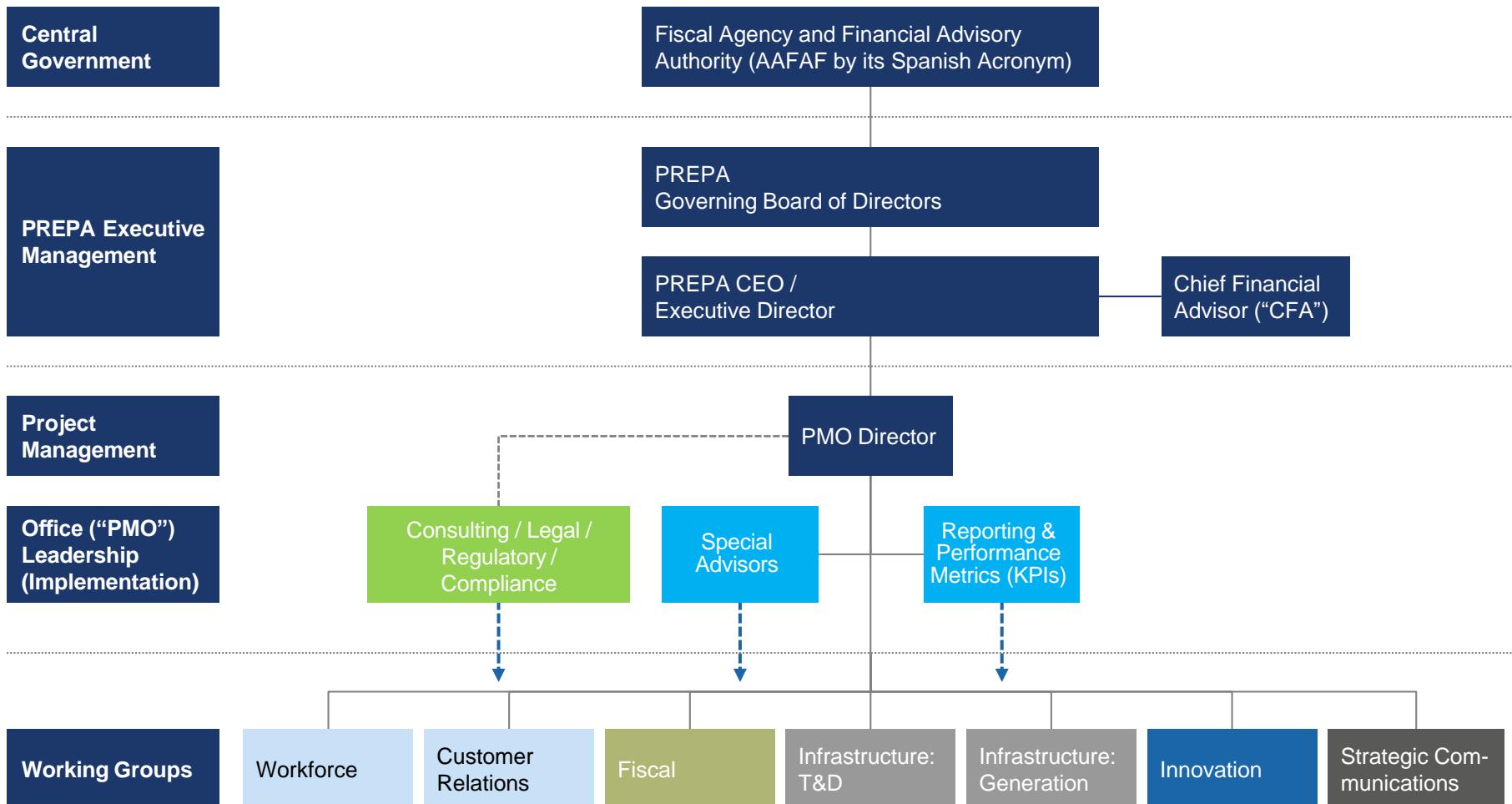
- The Fiscal Plan projections are subject to uncertainties. Those include, but are not limited to:
 - Lack of visibility regarding the availability and terms of federal funding for the restoration and rebuilding plan
 - The impact of the recent catastrophic hurricanes resulting in limited visibility as to expected recovery and revenue collections and the longer term repopulation of the island
 - Need for a new IRP to reassess needs under a new set of load scenarios to achieve long-term goals of system reliability, fuel diversification, and renewables integration
 - Uncertainty as to load forecast given continuously shifting views on macroeconomic indicators
 - Limited information regarding future macro resource planning
- PREPA's amended and restated Fiscal Plan is premised on a transformation of Puerto Rico's energy sector in a transaction that will take at least 18 months. The ultimate form of the transformation will be informed by many elements currently unknown and beyond PREPA's control including market appetite for the transaction and legislative action. PREPA, therefore, expects to amend and modify this Fiscal Plan to reflect the inputs received from the transformation process.
- Puerto Rico's ability to execute on the transformation of the energy sector and the ultimate structure of any such transformation may be impacted by the amount, structure, terms and conditions of the federal funding available to support the transformation.
- To meet the requirements of the FOMB, PREPA has also included a plan in which PREPA continues to operate during the Transformation period while driving cost-saving initiatives under the Fiscal Plan. In the event the transformation does not occur as planned, PREPA anticipates this Fiscal Plan would require additional amendment.
- PREPA subsidiaries and affiliates are included in the PREPA Fiscal Plan. These subsidiaries and affiliates include: PREPA holdings, LLC; Interamerican Energy Sources, LLC; Employees Retirement System; and PREPA Networks, LLC. PREPA Networks will be privatized as part of the Plan.
- Certain elements of the transformation of the energy sector in Puerto Rico such as the development and implementation of a new regulatory scheme will occur outside of PREPA. PREPA has addressed those elements in the Transformation Section of this Fiscal Plan but notes that these will also be part of an overall sector transformation contemplated in the Government Fiscal Plan.

Summary of PREPA's Fiscal Plan development - a deliberate process leading to the transformation of the energy sector outside of PREPA

	Fiscal Plan certified	FY18 budget certified	Title III filed	Fiscal Plan revisions and amendments	Transformation Plan	Exit from Title III (Plan of Adjustment)
Timeline	April 28, 2017	June 30, 2017	July 2, 2017	May – Sep 2017	Aug – April 2018	TBD, 2018-2019
What	<ul style="list-style-type: none"> ▪ Financial Oversight and Management Board for Puerto Rico (FOMB) certified PREPA Fiscal Plan for FY17-26 subject to amendments, including achieving a 21 cent per kWh target rate by 2023 	<ul style="list-style-type: none"> ▪ PREPA submitted its FY2018 budget, which the FOMB approved and certified, subject to reconciling and agreeing to their requirements for a revised Fiscal Plan with amendments 	<ul style="list-style-type: none"> ▪ FOMB filed a voluntary petition under Title III of PROMESA in the United States District Court for the District of Puerto Rico 	<ul style="list-style-type: none"> ▪ PREPA continued to revise its Fiscal Plan in close coordination with the FOMB ▪ Impact of hurricanes Irma and Maria affected fiscal plan assumptions and objectives 	<ul style="list-style-type: none"> ▪ Working team established to develop operational and regulatory transformation plan ▪ The FOMB established revised deadlines (April 2018) to submit an amended Fiscal Plan based on certain principles set forth in letter on December 12th, 2017 and updated macro assumptions and other data 	<ul style="list-style-type: none"> ▪ Determination of amount and terms of federal funds available to support transformation of energy sector ▪ Integration of results from operational and strategic improvement initiatives ▪ Plan of adjustment contemplating transfer of certain of PREPA's assets approved by the Federal District Court

I. Governance and Implementation

Governance structure at PREPA until energy sector transformation



1 On March 20th, 2018, the PREPA Board of Directors announced the replacement of the Executive Director with the appointment of a CEO

Governing Board

Board Composition

- The Governing Board consists of seven members and the Executive Director (ED) of AAFAF who has a board seat per Act 2-2017 on any covered government territorial instrumentality.
- BOD composition includes a mix of Governor appointees and at least three politically independent members

Current Focuses Include:

- Power restoration and recovery
- Near-term liquidity challenges spawned by recent storms
- Improving PREPA's overall transparency and credibility
- Enhancing internal human capital capabilities and business processes
- Transformation Plan for Puerto Rico's Energy Sector

**Board
elects one
member to
act as
Chairman**

Independent Board
Member

Independent Board
Member

Independent Board
Member

Governor Appointed
Board Member

Governor Appointed
Board Member

Governor Appointed
Board Member

Customer Elected
Board Member

AAFAF ED

PREPA Governing Boards' vision for the future of power in Puerto Rico

Development of a long-term transformation execution plan, with the goal of not just emerging from bankruptcy and restoration of power, but establishing a model for power generation and delivery that sets a global example for cost, resilience, sustainability, customer engagement and empowerment.

System is Customer-Centric

- The system serves the customer with affordable, reliable power, with transparent metrics for quality of service and with equitable consideration across all customers. Quality/Reliability can be differentiated for customers in a manner that serves their total cost and risk objectives. Customers are engaged by innovative products and value added services that provide choice among rate plan and risk management options, and provide access to wholesale contracting options for large customers. Customers are empowered with behind-the-meter alternatives for energy efficiency, demand management, and distributed generation, with the ability to become prosumers if they so choose

System Promotes Financial Viability

- The system is premised on positive economics on both sides of the meter. Rates are reasonable and create value for the customer, while pricing is sufficient to cover costs. Rate and market design create incentives to purchase, consume or produce energy in a manner that benefits the entire system. Subsidies are minimized, and those that remain have a non-distortionary impact. Operational excellence and sound long term planning reduce the cost to serve. Rates are affordable within a model that allows the utility to earn a reasonable rate of return and service its debt. The business model is robust to changes such as outmigration and reduction in energy demand, and does not create disincentives for adoption of cheaper energy resources, either at the grid level or at the customer premises

System is Reliable and Resilient

- The grid is thoughtfully planned, well maintained and safely operated to achieve defined reliability and resiliency goals. There is visibility into the system at all levels, and control where appropriate. Standards for recoverability create a measure for resilience. The choice of architecture (distributed vs. regionalized vs. centralized) is intentionally made to balance reliability/resilience and cost objectives while also taking advantage of advancements in technology and innovation

System is a Model of Sustainability

- There is a progressive focus on diversifying energy resources and reducing the carbon intensity of the power sector, in both primary generation and backup generation. Power generation is efficient and minimizes emissions.
- Customers have incentives to use energy wisely and to generate their own clean energy. The grid and grid systems are designed to take maximum advantage of increasingly cost effective renewable power generation alternatives and to integrate emerging technologies

System Serves as an Economic Growth Engine for Puerto Rico

- The quality, reliability, and cost of power attracts new commercial and industrial development to Puerto Rico, and encourages existing commercial and industrial customers to expand their operations. Transformation and reinvestment in the power system creates new jobs. Innovation in the generation and delivery of power creates a local ecosystem of businesses that provide for evolving needs for equipment, technology and services in Puerto Rico and beyond



Recent Actions by Governing Board to Assist Until Sector Transformation

CEO Appointment

- On July 18th, 2018, Gov. Ricardo Rosselló recommended José Ortiz as new CEO of PREPA, whom the new PREPA board confirmed. Ortiz previously served as executive director of PRASA & as chairman of PREPA's governing board
- The PREPA Chief Executive Officer ("CEO") role replaces the Executive Director, and is a permanent position. The CEO reports directly to the Governing Board and is the most senior officer managing the organization. PREPA directors and leaders of functional areas such as T&D and Generation report to and meet regularly with the CEO
- The CEO's responsibilities include managing the corporation's day-to-day operations, and implementing financial, operational and administrative restructuring efforts and initiatives that are consistent with the certified PREPA Fiscal Plan and Budget
- The CEO shall also be responsible for ensuring an effective and efficient interaction with FOMB and other stakeholders and shall be responsible for undertaking any and all necessary actions required to support the implementation of the PREPA Transformation Plan, as outlined in the certified PREPA Fiscal Plan, including the generation asset transaction and T&D concession, and collaborating with the working group established for the PREPA Transformation Plan

Chief Financial Advisor ("CFA")

- On December 1, 2017, the Governing Board announced the retention of Todd W. Filsinger of Filsinger Energy Partners, as CFA. The CFA shall provide the CEO with general financial and managerial support on such areas as budgeting, financial management, cash management, and expense approval, etc., shall advise and support the CEO on the implementation of the fiscal and operational restructuring reforms and initiatives outlined in the certified Fiscal Plan and the implementation of the certified Budget, and shall provide assistance and support on any other matters as such may be requested by the CEO
- The CFA reports directly to the CEO

Director for Strategic Transformation Initiatives ("PMO Director")

- Established by Governing Board Resolution in 2017 to lead the Project Management Office (PMO)
- Develop clear & specific policy rationales for project prioritization, implementation and timelines
- Manage and supervise working groups, internal staff, special advisors, external resources
- Develop and publish relevant transformation metrics and KPIs, and prepare reports with assistance from Special Advisors & Working Group Leads
- Oversee engagement with external stakeholders and promote internal (PREPA) stakeholder engagement and transparency to ensure PREPA meets transformation schedules.
- The PMO Director is Fernando Padilla

Transformation Advisory Council (TAC)

- December 11, 2017: Governing Board named 11 utility industry leaders to serve as TAC members
- Recognizing that PREPA's expertise in the energy sector is valuable in planning for the sector transformation, the TAC was formed to provide the Governing Board and management with advice on developing a long-term vision and transformation execution plan for the island's power system



Recent Actions by Governor / AAFAF for Transparency & Sector Transformation

Office of Contract Procurement and Compliance (OCPC)

- Established through Executive Order 2017-66, November 2017 (See next slides)
- Mission is to ensure compliant and efficient PREPA procurement to support recovery, restoration of power and rebuilding of energy grid
- All qualifying PREPA procurements of over \$500K are reviewed and approved by OCPC prior to final action
- Independent review with technical experts to confirm contracts and procurement are compliant with local and federal laws and regulations
- Implement procurement process controls and procedures to mitigate compliance risk, limit potential de-obligation risk and enhance accountability
- Implement process enhancements including automation and integration, monitoring and reporting to increase transparency, accountability and effectiveness

Transformation & Privatization

- Private-Public Partnership Act Amendment (filed Puerto Rico House / Senate on March 6, 2018)
- Regulatory structure modifications under development
- 18+ month transformation and privatization process: Preparation / Market Process / Approvals
- Working Group established between Governor, FOMB, and advisory teams to coordinate and lead transaction process
- On June 20th, 2018, Gov. Ricardo Rosselló signed Act 120-2018, which authorizes the sale of power generation assets and a concession for T&D.

The Transformation Plan is Intended to Provide a Roadmap for a Transformed Energy Sector for Puerto Rico



Provides Puerto Rico with a 21st century energy sector that serves as an engine of economic growth while protecting the environment



Builds energy infrastructure that recognizes the need for a transformed and resilient system, while taking into account the projected decrease in demand



Achieves low-cost and reliable energy



Provides sustainable structural and financial models for energy on the Island



Leverages available federal funding for disaster recovery



Increases generation from renewable energy



Provides platform for the implementation of innovative technology to drive efficiencies and improve customer service through operational excellence



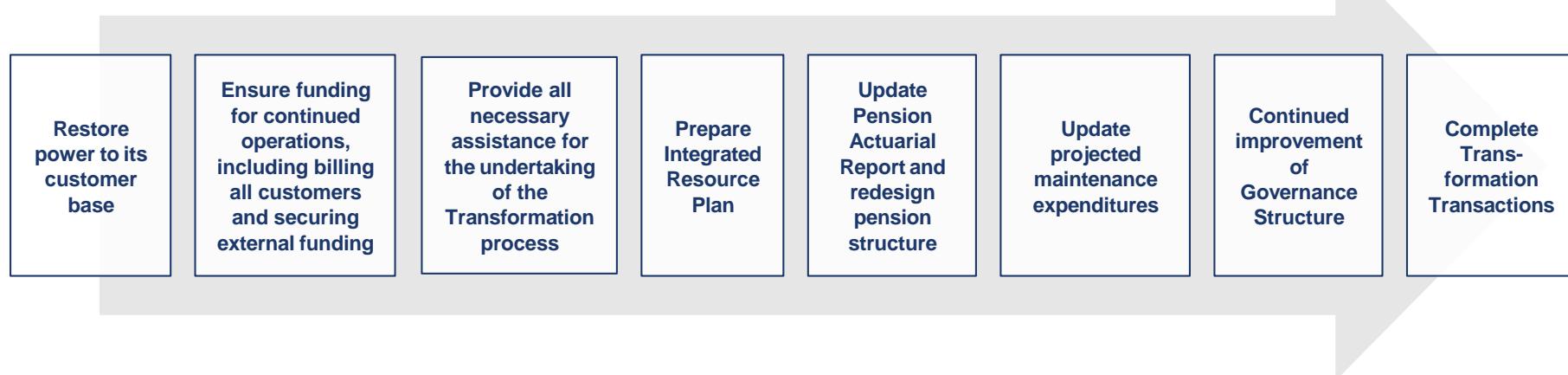
Provides, professional and independent governance



Relies on a robust and transparent regulatory framework to regulate private and monopoly components of the new energy sector, promote private investment, and implement and manage efficient rate designs and effective incentives

Critical Work Streams Identified for the Illustrative Transformation Period

PREPA will undertake or complete the following tasks over the Transformation Period:



Further implement cost controls and improve cash flow by executing the following initiatives:

- Procurement process enhancements (i.e. OCPC)
- Cash distribution controls
- Collection of insurance proceeds
- Maximize federal funding available for disaster recovery
- Improved account maintenance and billing quality
- Improved fleet management
- Inventory management: warehouse consolidation and improved training on inventory management software

Process

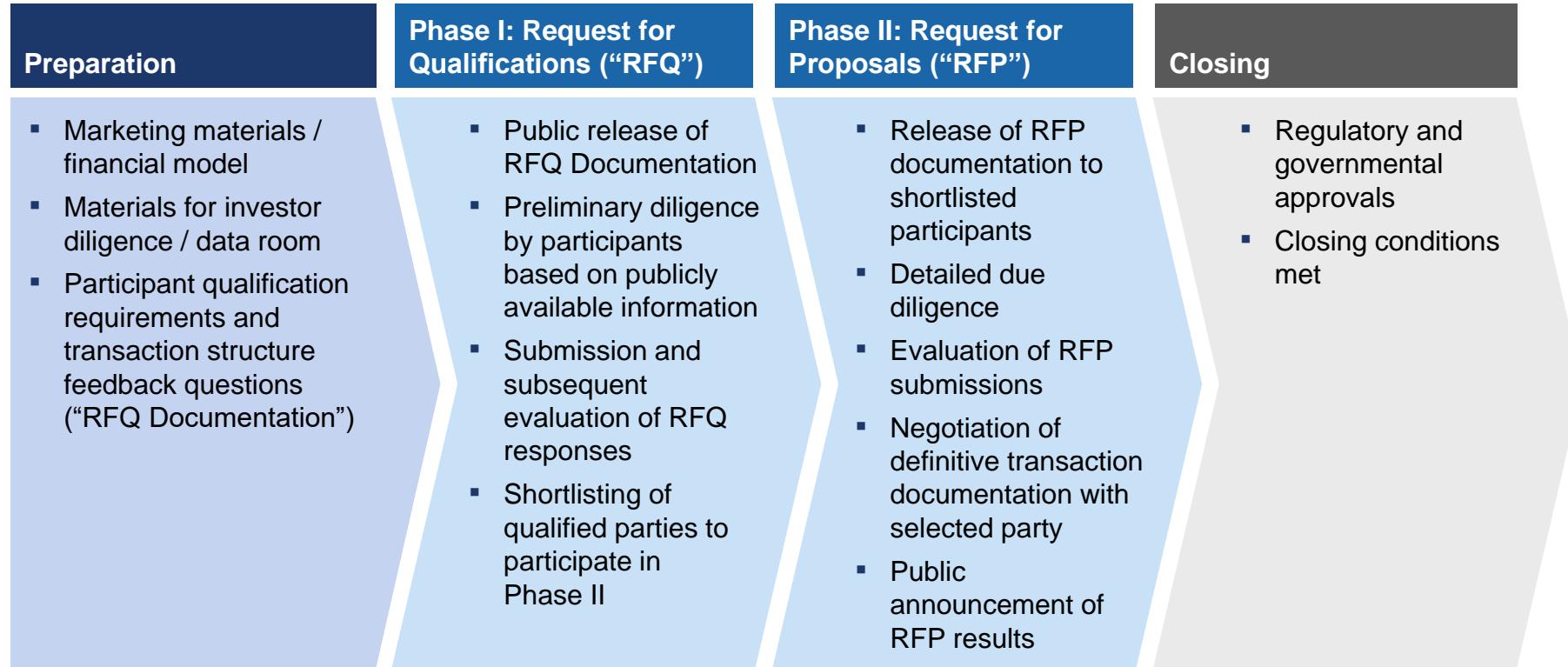
- Identify, introduce, and integrate private energy sector participants, capital, and expertise into the Puerto Rico Energy sector over 18+ months
- Analyze and establish a productive industry structure and regulatory process to incentivize investment and innovation in energy technology

Considerations

- Amount and terms of federal funding available to support transformation of the electric sector will be a primary driver of the structure and desirability for approach to transformation and extent of private ownership or concession
- Any limitations to funding availability caused by structural or organizational options will be thoroughly scrutinized during the transformation identification and integration process

Transformation Process – Illustrative Timeline

- T&D and Generation processes are expected to follow separate, but similar, transaction timelines
- The RFQ process will be open to any and all interested parties, who are encouraged to submit their feedback and qualifications



The transformation timeline and structure may be adjusted at any time based on feedback from participating parties

Fiscal Plan Implementation

Historical Challenges

- For reasons within and outside of its control, PREPA has historically been unable to implement a business plan that leads to the lowest possible energy rates for Puerto Rico's ratepayers or achieve compliance with environmental regulations, while ensuring reliability and power quality.

Transformation

- On January 23rd, 2018 the Governor of Puerto Rico announced the plan to radically shift from the current energy sector model by enacting deep energy sector reform that fully leverages private market expertise, know-how and investment in order to promote the lowest possible rates & compliance with applicable environmental regulations.

Recovery

- As part of the energy sector reform, safeguards and rate regulation will be put in place via a strong regulator to protect ratepayers and ensure the development of a world class energy system via the establishment of the appropriate regulatory framework (i.e., with clear and transparent KPIs, targets and milestones, including right-sizing operational costs for the new demand environment; delivering projects efficiently across asset planning, procurement, and construction; lowering long term maintenance costs while increasing reliability through predictive maintenance strategies; and lowering long-term fuel and purchased power costs).

Market Participation

- The base case for the transformation of the electric sector in Puerto Rico is anticipated to involve a sale of existing generation assets, development of new generation and a concession by the public entity of the T&D System. PREPA expects this structure to be tested against the market.
- Puerto Rico's ability to execute on the transformation of the energy sector and the ultimate structure of any such transformation may be impacted by the amount, structure and terms of the federal funding available to support the transformation, and may be adjusted according to market feedback.

II. Historical Context and Current Challenges

PREPA is Vertically Integrated and the Sole Provider of Energy in Puerto Rico

Key statistics on PREPA



- PREPA serves ~1.5M customers and has ~6,000 employees



- For FY2017, PREPA had total revenues of **\$3.4B**, total assets of **\$9.4B**, and total liabilities of **\$11.4B**



- Overview of generation system:
 - Generating Capacity: **6,085 MW (PREPA 4,892 MW; IPP 1,193 MW)**
 - **45%** of generation is from oil, compared with national average of **4%**
 - **31** major generating units in **20** facilities; older than national average
 - **4%** of generation capacity from renewables, vs. national average of 15%
 - Plants average ~**40 years** old¹



- Overview of transmission and distribution system
 - Transmission Lines: **2,416 miles (230 kV / 115 kV)**
 - Distribution Lines: **30,675 miles (38 kV, 13 kV, 8 kV, 4kV)**
 - 38 kV substations: **283**
 - 115 kV substations: **51**

¹ PREPA-owned plants excluding renewables

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PREPA's Historic Challenges in Operating and Maintaining the Electric System are now Exacerbated by the Catastrophic Damage Caused by Hurricanes Irma and Maria (1/2)

Generation

- **Frequent power plant outages** (12 times more often than mainland US average)
- High dependence on **fuel oil and inability to diversify fuel mix** (<4% from renewables and 45% oil, relative to industry average of 4% oil)
- Principal generation located far from demand centers with a **poorly maintained** T&D infrastructure

Transmission and distribution

- **T&D infrastructure that has not been adequately maintained**, further contributing to outages, losses, poor quality
- The **\$2.5 billion** estimated expenditure need identified by PREPA in the 4-28-2017 Certified Fiscal Plan (pre-Maria) for **repair and maintenance** prior to the hurricanes is no longer sufficient and does not address necessary **resiliency and hardening**; post-hurricane T&D expenditure could exceed \$13B
- **Highly vulnerable** to catastrophic events impacting delivery of electric service

Collections and customer service

- Relatively high level of **technical losses and theft** (17.3% of energy lost in FY 2016 was higher than industry average; source: PREPA Planning and Research Directorate)
- Disorganized and ineffective **customer service infrastructure**
- **Inconsistent and unreliable** IT system for remote, reliable, and timely collections, and service
- **High vulnerability** to damage from disasters immediately impacting collections, revenue, and service

PREPA's Historic Challenges in Operating and Maintaining the Electric System
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are now Exacerbated by the Catastrophic Damage Caused by Hurricanes Irma and Maria (2/2)

Organizational	<ul style="list-style-type: none">▪ Lack of institutionalized processes and procedures▪ Outdated systems and information technology▪ Above-market benefits in collective bargaining agreements with evergreen provisions▪ Underfunded pension obligations (over \$3.6B)▪ Significant losses of experienced personnel
Environmental and Safety Compliance	<ul style="list-style-type: none">▪ Safety system and record dramatically below industry standards▪ History of environmental non-compliance▪ Inability to execute PREPA's strategic environmental compliance plan, including timely compliance with MATS (Mercury and Air Toxic Standards) EPA emission limits
Operating Environment	<ul style="list-style-type: none">▪ PREPA's static business model has not adopted changes in a rapidly changing and innovative industry▪ Legal requirements to provide power to certain customers at subsidized rates▪ Poor quality of electric service has impacted business and investment climate▪ The prolonged and ongoing recession has led to a significant drop in energy sales▪ Poor credit rating leading to lack of market access and the inability to invest in needed capital expenditure projects
Post-Irma and Maria Challenges	<ul style="list-style-type: none">▪ Accelerated migration of population▪ Accelerated demand reductions▪ Greater possibility of distributed generation and inside fence generation▪ Dramatic economic contraction and job losses▪ Deeper distrust in state-monopoly as sole provider of electricity

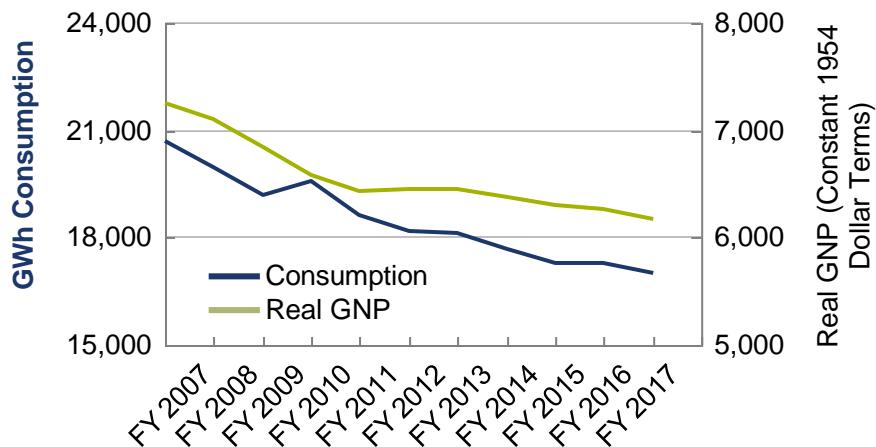
PREPA is One of the Largest Public Power Utilities in the US by Customers Served, but has Relatively Low Generation and Sales on a Per Customer Basis



SOURCE: PREPA, as of June 30, 2016, based on unaudited results APPA. "U.S. Electric Utility Industry Statistics, 2014". 2016-2017 Annual Directory & Statistical Report

Poor Macroeconomic Trends have further challenged PREPA's Operations

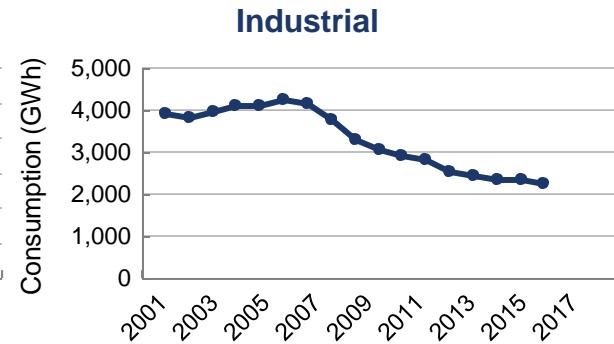
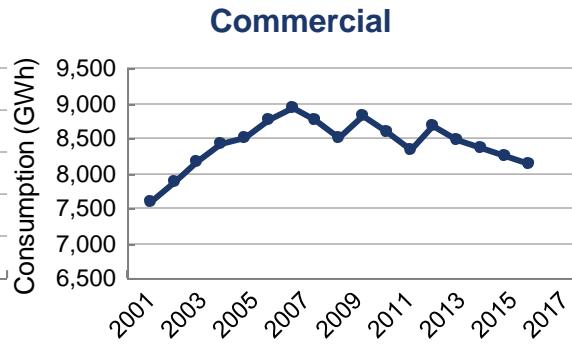
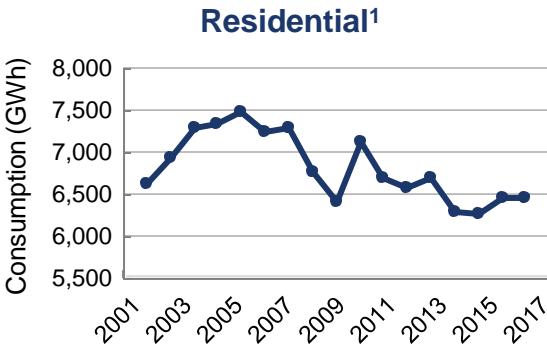
As the economy deteriorated, population declined, and disruptive technologies emerged, demand dropped 18% from 2007 to 2017



13% loss in demand in the residential sector since 2005 peak

10% loss in demand in the commercial sector since 2007 peak

48% loss in demand in the key industrial sector since 2006 peak



NOTE: here and elsewhere in the document, Fiscal Year begins in July of the previous calendar year

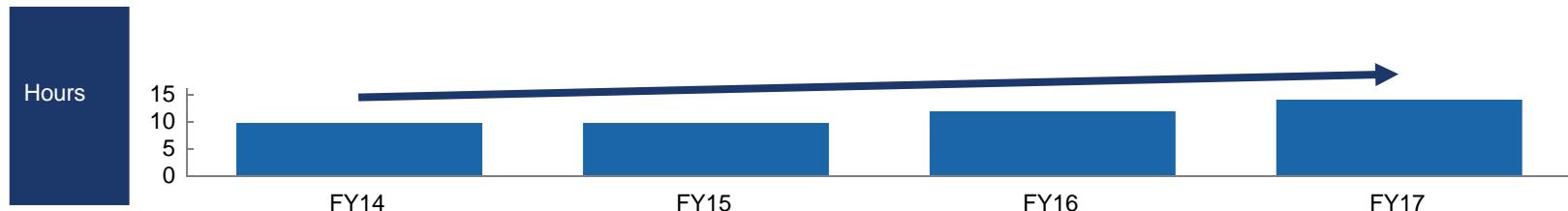
SOURCE: PREPA's rate records from 2000-2017



Pre-Storm Reliability Metrics were Dismal Relative to Industry and Trending Worse

	FY17	2016 Utility Peer Group			Comparison of PREPA reliability to median North American Utility Peer Group reliability ⁽¹⁾
		PREPA ¹	Lower Quartile	Median ⁽³⁾	
SAIDI	14.35	2.77	1.92	1.35	On average, PREPA customers do not have power for 14.4 hours
SAIFI	4.83	1.32	1.04	0.86	On average, PREPA customers lose power almost 5 times a year
CAIDI	2.97	2.10	1.84	1.57	On average, when PREPA customers lose power it takes 3 hours to restore

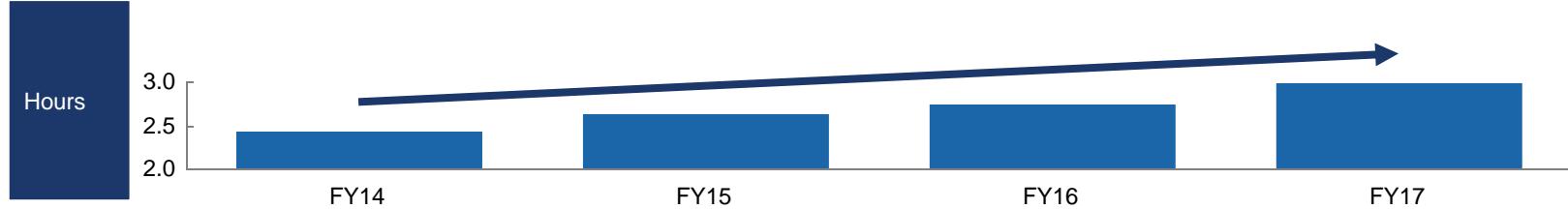
System Average Interruption Duration Index (“SAIDI”)



System Average Interruption Frequency Index (“SAIFI”)



Customer Average Interruption Duration Index (“CAIDI”)



1 PREPA data LTM as of July 2017, SAIDI/CAIDI are measured in hours and SAIFI is measured in # of occurrences

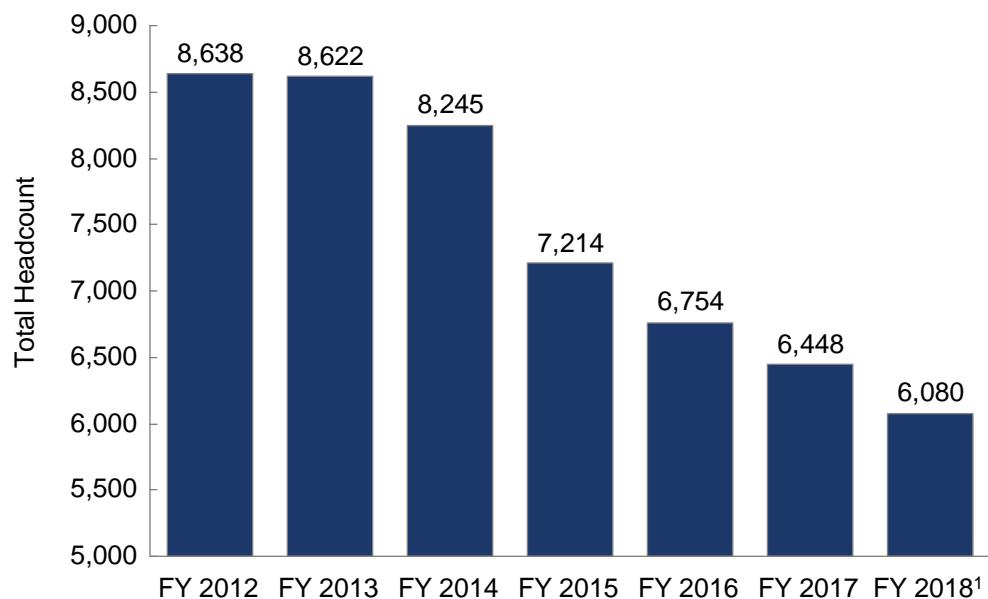
2 FY 2017 data projected based on prior year performance for August through December to exclude the impact of the hurricanes

3 Source of SAIFI, SAIDI and CAIDI North American utility data is the IEEE Benchmark report

Key Operational Areas – Headcount decline

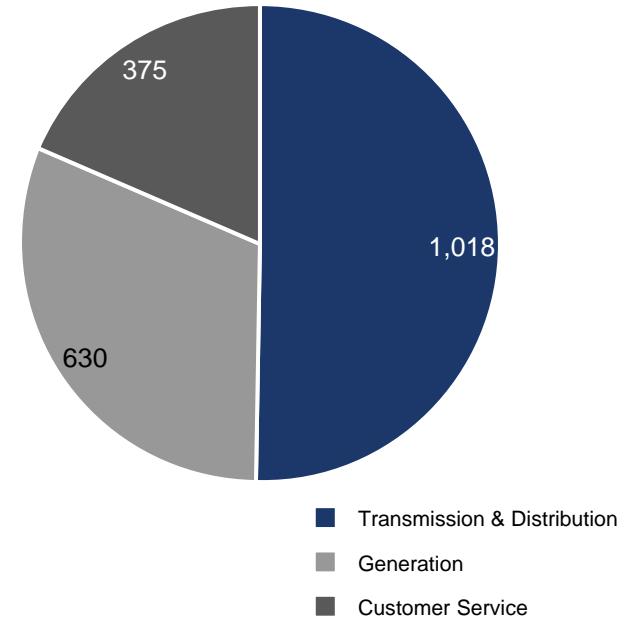
The loss of almost 30% of its workforce since 2012 has constrained PREPA's ability to respond to challenges

Annual employee headcount



- 6,080 as of May 2018
- PREPA's headcount declined by 2,411 from FY 2012 to Dec 2017 – mostly due to retirement

Employee retirements from 2012-2017



- Of the 2,343 employees that retired between 2012 and 2017, 2,023 (86%) were from operations and 320 from administration

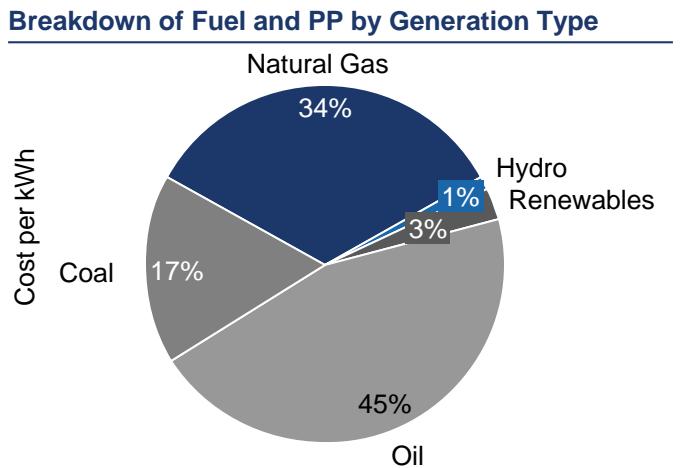
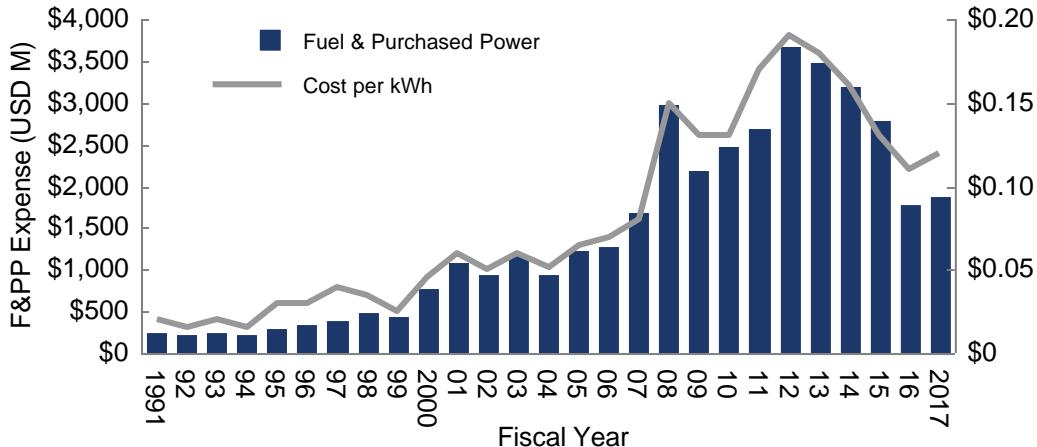
¹ PREPA has 600 employees who are awaiting approval from the Employees Retirement System of PREPA

SOURCE: PREPA Human Resources Directorate

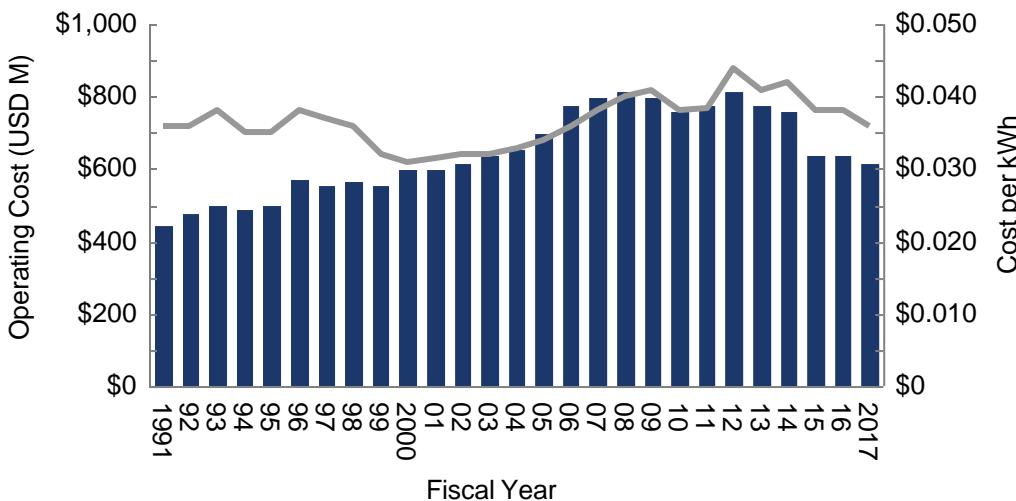
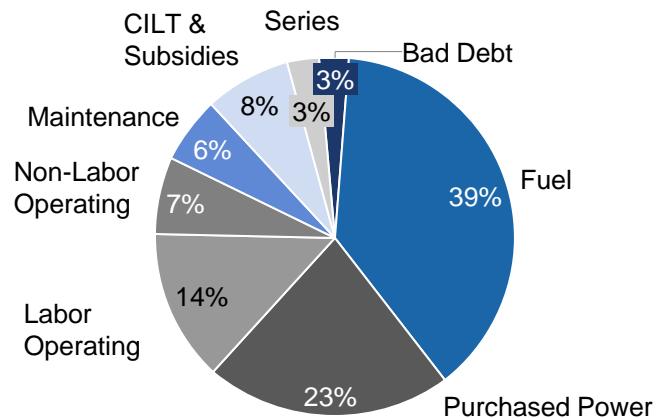
Fuel/Purchased Power Expense Increased Dramatically over the Past Three Decades

■ Operating Expense ■ Cost per kWh

Fuel and Purchased Power is the predominant cost and most volatile rate component for PREPA. Reducing dependence on refined fuel oil for power generation has long been a top priority for PREPA and though progress has been made, oil remains the main source of energy.



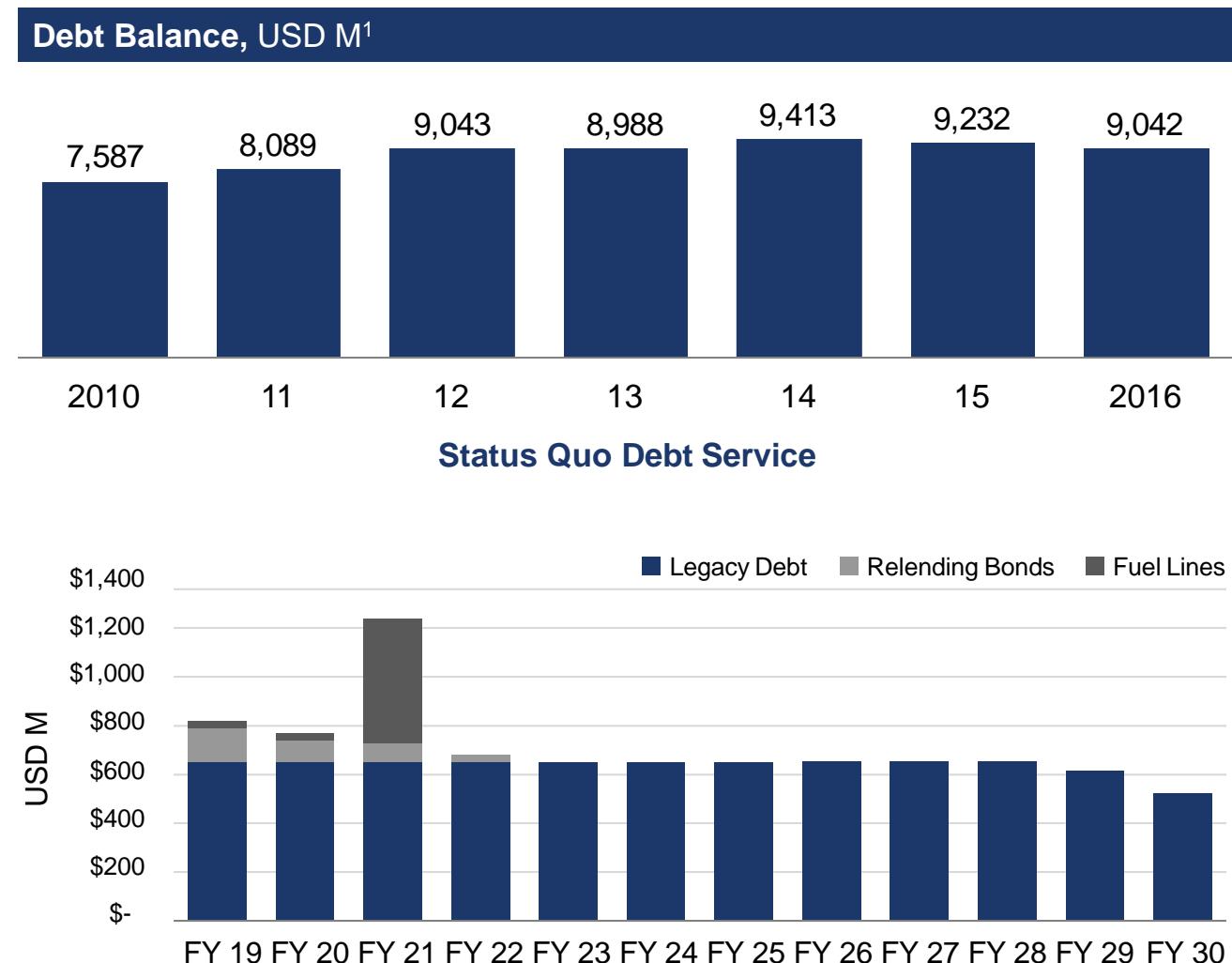
Operating Expense Breakdown



SOURCE: PREPA Planning & Finance

PREPA's Current Debt Structure is Not Sustainable

- As demand has fallen, financial performance has declined and PREPA has borrowed to fund operating expenses. By 2014, PREPA was overburdened with debt and had no access to additional liquidity
- PREPA had \$9.25B outstanding debt as of 5/3/2017, with debt service obligations of \$4.5bn over the next five years
- The estimated annual debt service obligation based on term out of all long-term financial liabilities at a 5% interest rate over 25 years was approximately \$657 million per year



Pension: Underfunding Poses Another Significant Challenge for PREPA

- PREPA's Employee Retirement System ("PREPA ERS") is designed to meet the defined-benefit pension and other post-employment benefits ("OPEB") obligations of PREPA's active and retired employees (including beneficiaries)
- The PREPA ERS is significantly underfunded with an estimated Net Pension Liability of ~\$3.6B (based on 2014 data with a single equivalent interest rate of 4.27%, which is a blended rate based on 8.25% rate of return for plan assets and 3.66% municipal bond index rate, taking into account the date pension assets are expected to be depleted).
 - PREPA is in the process of reviewing and updating these numbers and projections. PREPA expects that the unfunded liability will be significantly higher particularly when considering recent trends in PREPA employees and a more realistic lower rate of return.
- OPEB (\$384m accrued) is entirely unfunded as reported in PREPA's 2012 "Report of Actuary on the Other Post- Employment Benefit REVISED Valuation", revised as of October 2015

PREPA 2014 Actuary Report (USD B)	
Long-Term Expected Rate of Return	8.25%
Municipal Bond Index Rate	3.66%
Projected Asset Depletion ¹ (Fiscal Year)	2027
Single Equivalent Interest Rate	4.27%
Total Pension Liability ("TPL")	5.0
Fiduciary Net Position (PREPA ERS Assets, "FNP")	1.4
Net Pension Liability ("NPL")	3.6
Funded Ratio	28%

In February 2018, PREPA received a revised actuarial report from the Retirement System based on 2014 data. The Net Pension Liability more than doubled from \$1.7B to \$3.6B compared to the initial report

¹ Fiscal year in which Plan's Fiduciary net position is projected to be depleted from future benefit payments for current members

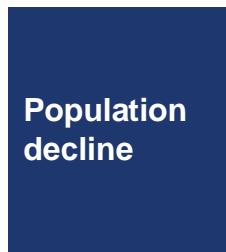
III. Baseline Financial Projections And Debt Service Analysis

Fiscal Plan Status, Key Assumptions and Metrics

The Financial Projections in this section assume PREPA continues to exist “steady state” as a public corporation. The impact of aspirational operational initiatives is included where some certainty on implementation exists

Input	Assumptions
Macroeconomic	Revised forecasts due to the combined effects of austerity, population decline, natural disasters, and increased deployment of Distributed Generation / Energy Efficiency (“DG/EE”)
Current Rates	Continuing operating under ~7.5 cent (base + provisional) rate that went into effect in August 2016 Review rate regulation alternatives such as Formula Rate Making (FRM) and Multi-year rate filings
Fuel & Purchased Power	Price of Residual Oil (#6) is approximately 40% higher than the forecast used in the Certified Fiscal Plan (EIA Annual Energy Outlook 2017); proportionally higher than expected diesel burn due to system instability
Ongoing Maintenance	Expenditure requirements and schedule has changed significantly . Currently, there is low visibility on revised aggregate levels and timing due to restoration activities and need for updated IRP. PREPA is expected to require additional funds above the annual average anticipated for Transmission IRP maintenance.
MATS Compliance / Renewables	Projects to enable MATS compliance alternatives, including AOGP, will be reviewed in the updated IRP. RFP for 300 - 600MW of renewable capacity will be developed.
Liquidity and Operations	Assumes receipt of external funding to cover expected deficit estimated for lost revenue but does not include repayment or terms associated with potential credit facilities FY2020 and beyond require rate adjustments or external funding for necessary operating and maintenance expenses Interest payments from loan incorporated into cash flows, but not cost of service
Restoration Funding	Timing of expenditure and disbursement still uncertain and are not included in the financial projections. Currently, the central government has initial disbursement of \$2 billion approved with 100% FEMA cost share. Puerto Rico is requesting a cost-share adjustment for future FEMA's program amounts under the Stafford Act, but potentially requires 10% cost-share match from PREPA. Puerto Rico seeks Community Development Block Grant-Disaster Recovery (CDBG-DR) funding to cover the cost-share match requirements of Stafford Acts programs. Historically, either FEMA or Congress has authorized a 100% federal cost-share for large and catastrophic disasters such as Hurricane Andrew in Florida and Hurricane Katrina in Louisiana and Mississippi. PREPA assumes this cost share will be paid for through the current maintenance line item.

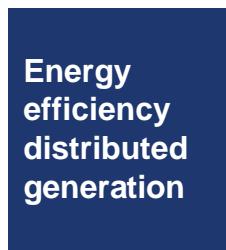
Macro Assumptions and Drivers



- The central government population forecast projects accelerated population decline due the combined effects of austerity, economic depression, and natural disaster impacts



- Economic decline for forecast period is driven by the hurricane impact, lost capital, and lack of labor reform. This is somewhat mitigated by federal funding for restoration, which creates short-term employment opportunities but does not stop the net migration from the island

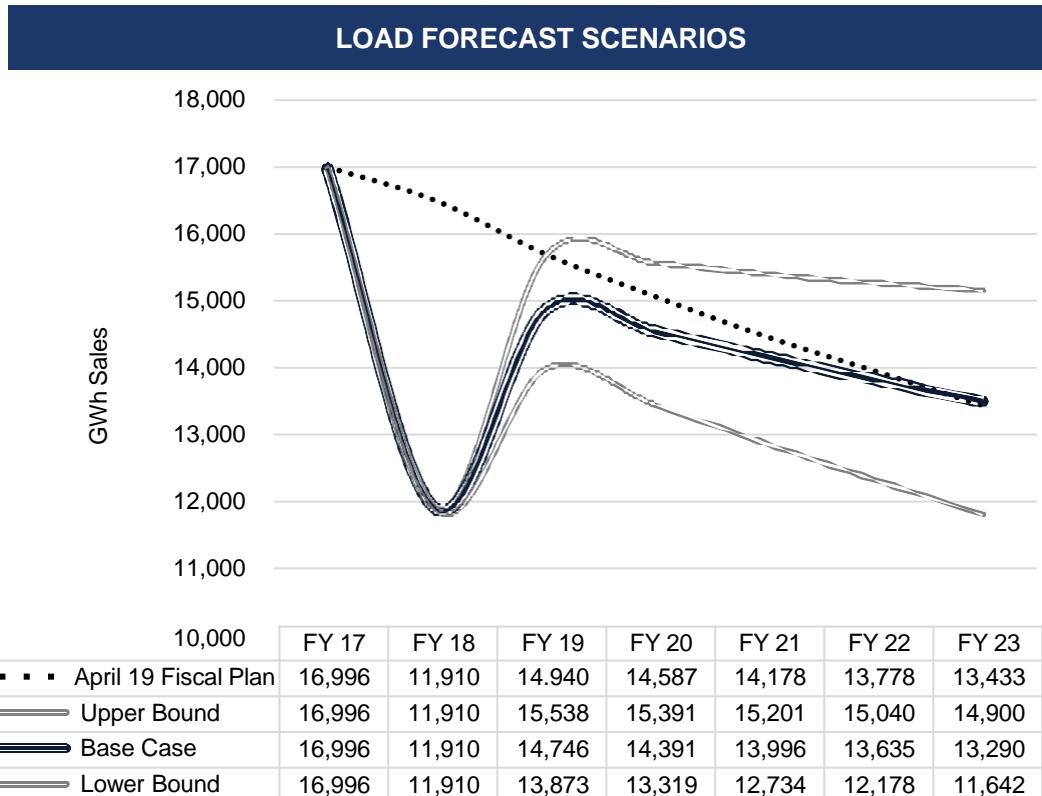
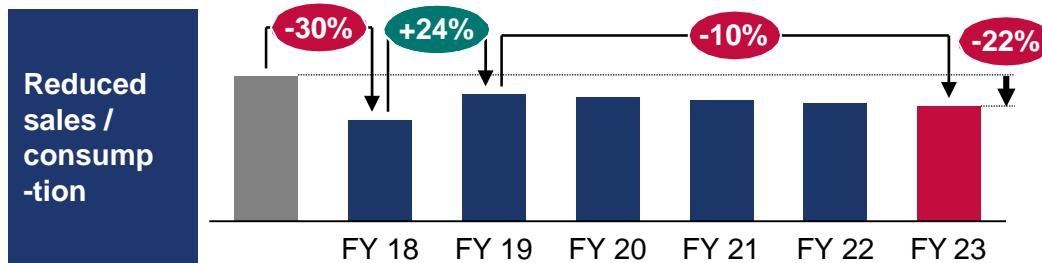


- Distributed generation, both net metering and grid defection, and energy efficiency solutions deployment are assumed to accelerate during restoration, which drives down load and energy sales an additional 11% by FY2023

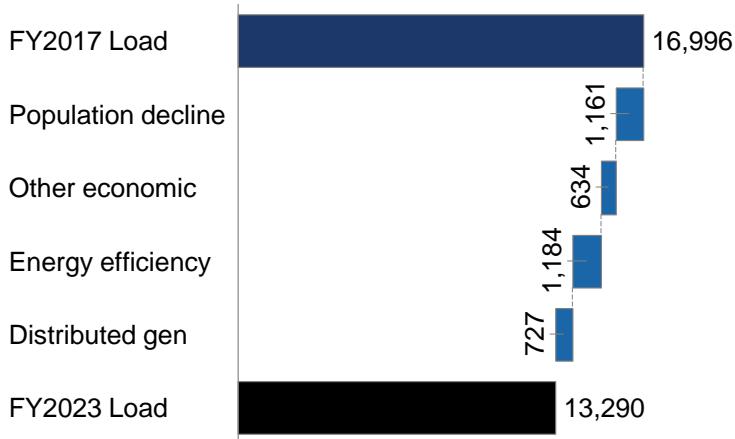


- Short term fuel price budget projections were adjusted for recent changes in residual oil and diesel prices. Long-term prices are expected to rise and increase per unit fuel costs

Load Forecast Scenarios and Fiscal Plan Base Case



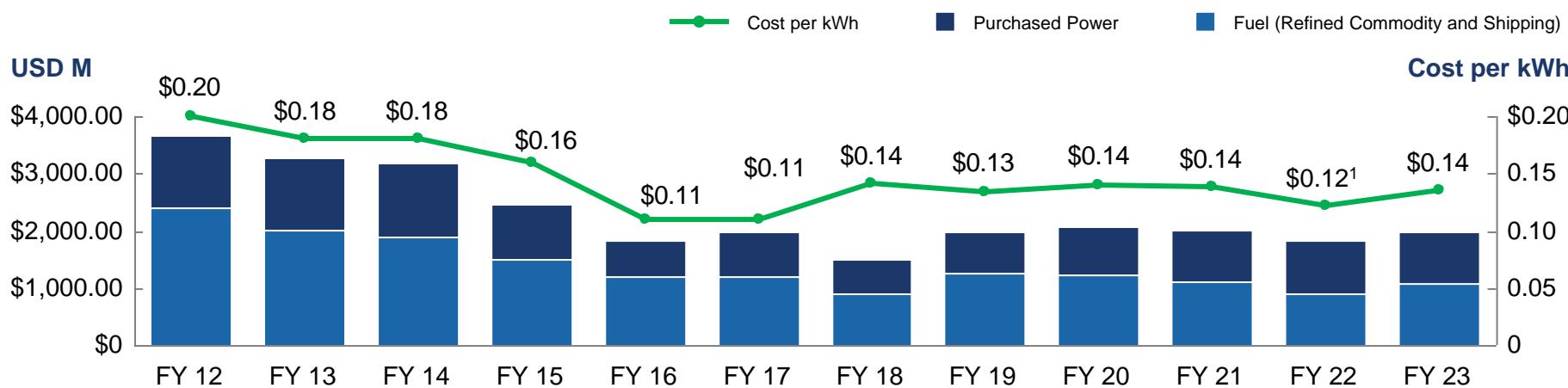
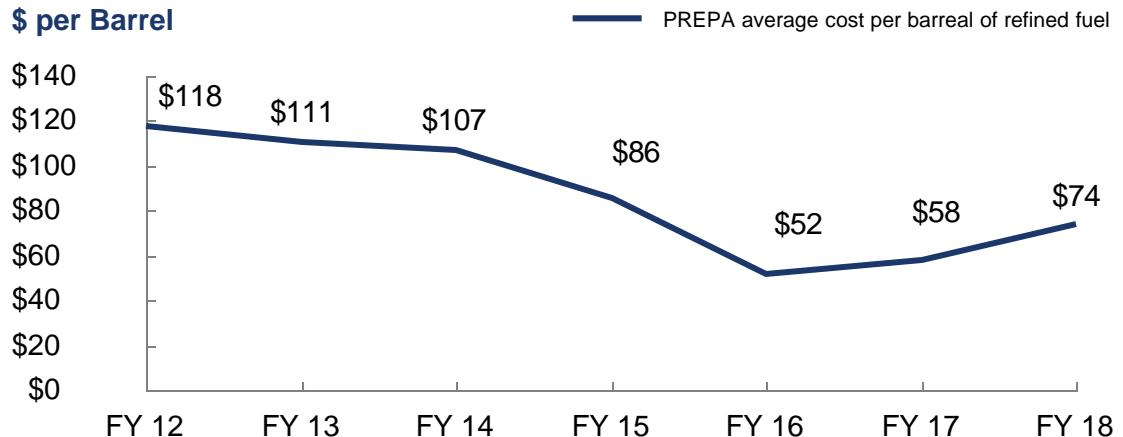
- Storm damage and restoration has complicated short and long term load forecasts due to uncertain impacts from secular trends in DG & EE. Scenarios were developed to test a range of possible outcomes



Scenario	Distributed Generation (DG)	Energy Efficiency (EE)
High	Long run 170MW capacity penetration	Assumes historical trend stays constant, no acceleration
Base	Incremental 25% of industrial load shed relative to High	30% of commercial / residential load achieves 30% more EE
Low	Incremental 50% of industrial load shed relative to High	40% of commercial / residential load achieves 30% more EE

In Addition to the Base Rate, PREPA's Overall Fuel & Purchased Power Spend is Projected to Stay Relatively Flat

PREPA's Fiscal Plan Baseline assumes continuing to operate as a public entity and implementing the capital plan laid out in the 2015 Integrated Resource Plan, with modifications on timing and capacity due to updated load forecasts

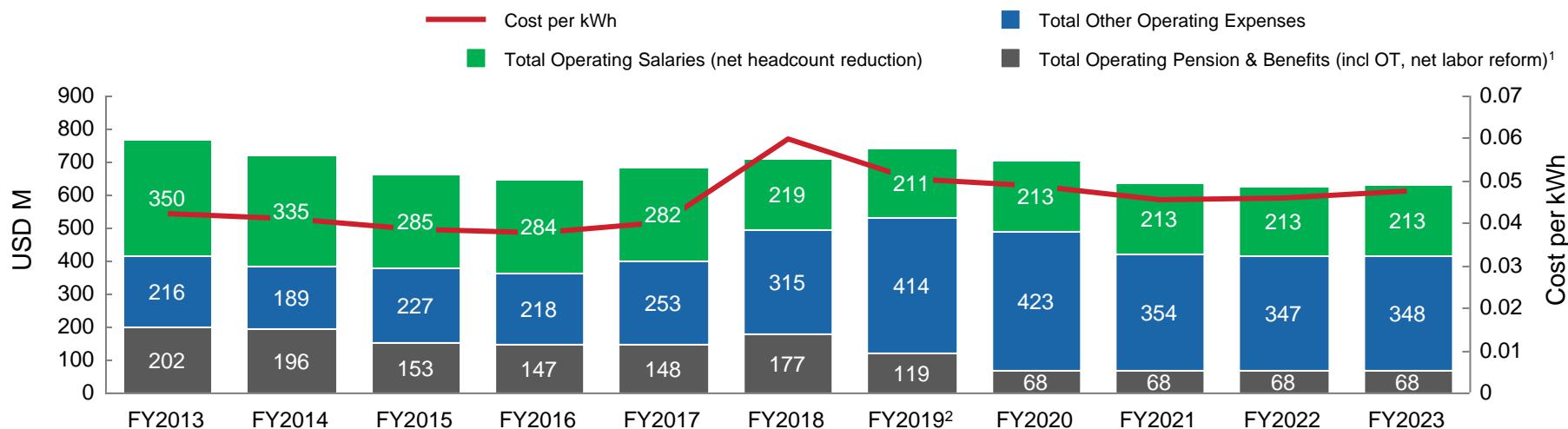


Financial projections are in preliminary form and subject to change. More detail to be provided

¹ The Fiscal Plan assumes incremental performance improvements of \$170m in F&PP in FY2022 as well as new natural gas supply coming online. The spike back up in FY2023 is due to continuing increases in fuel prices and repowering one of the combined cycle plants, per the certified IRP.

Historical & Projected Operating Expense

	Comments
Salaries	Current headcount of 5,299 operating employees (5,968 ³ total) is held flat through the forecast period (PREPA and advisors are analyzing labor benchmarks to determine potential rightsizing adjustments to headcount) Assumes no growth in salaries consistent with the payroll freeze in effect
Pension & Benefits	Pension & Benefits expenses are projected using historic spending levels plus input from the FY2018 budget Going forward these costs are assumed to fluctuate relative to headcount and revised actuarial numbers, with pension reform savings estimated from switching to a defined contribution system and reducing benefits by roughly 10% Includes retirement system (including annual additional employer contribution totaling \$60M beginning in FY2020), social security, and worker's compensation insurance. Medical benefit reform, pension benefit reform, and Christmas bonus elimination are included in the labor reform measures All overtime and overtime benefits are included in this line item
Non-labor O&M	Comprised of materials, per diem, property & casualty insurance premiums, restructuring fees, retiree medical benefits, security expenses, banking services, maintenance, utilities, and miscellaneous expenses FY2018 is based on budget itemized requests for non-labor/non-fuel O&M expenses from PREPA's directorates FY2019 and beyond is projected using historic spending levels plus input from the FY2018 budget



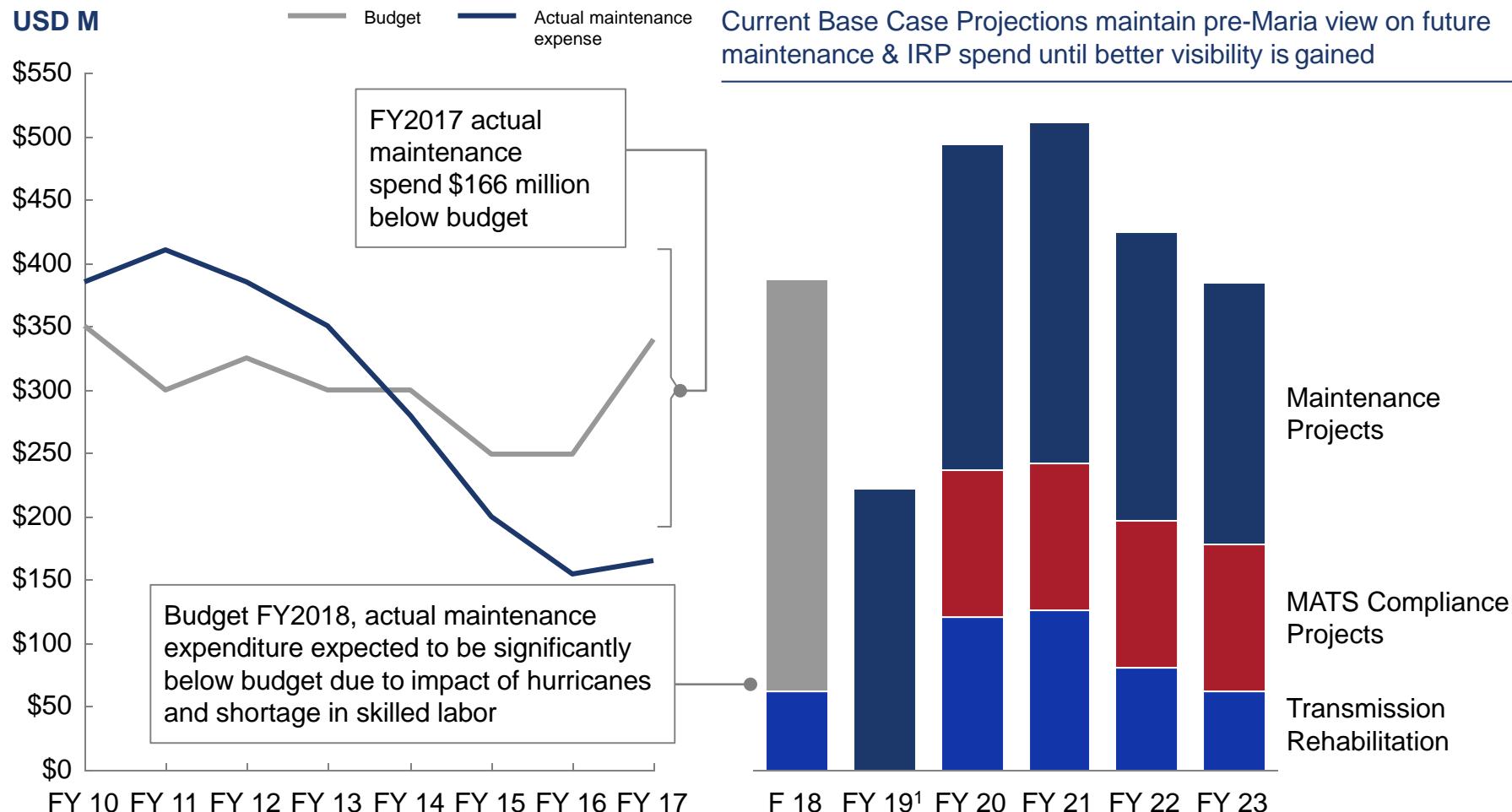
1 Additional Employer Contribution and pension benefits included for illustrative purposes and will be updated once update Actuarial valuation is completed.

2 Increase in FY19 total operating costs driven by costs such as Title III Restructuring and FOMB advisor costs allocated to PREPA

3 As of time of publishing PREPA had 35 unfilled positions for a total desired headcount of 5,968

Historical and Projected Maintenance Expense

Since FY2013, PREPA has underspent on budget maintenance, directly impacting the reliability of the system



Financial projections are in preliminary form and subject to change. More detail to be provided after the completion of the on-going IRP process.

¹ MATS Compliance Projects and Transmission Rehabilitation investment dictated by the PREC certified IRP are being revisited post-hurricanes Irma and Maria.

SOURCE: PREPA Planning & Finance

Indicative Revenue Requirement Under Steady State Assumptions

PREPA steady-state 5-year revenue requirement

USD M, kWh, \$/kWh

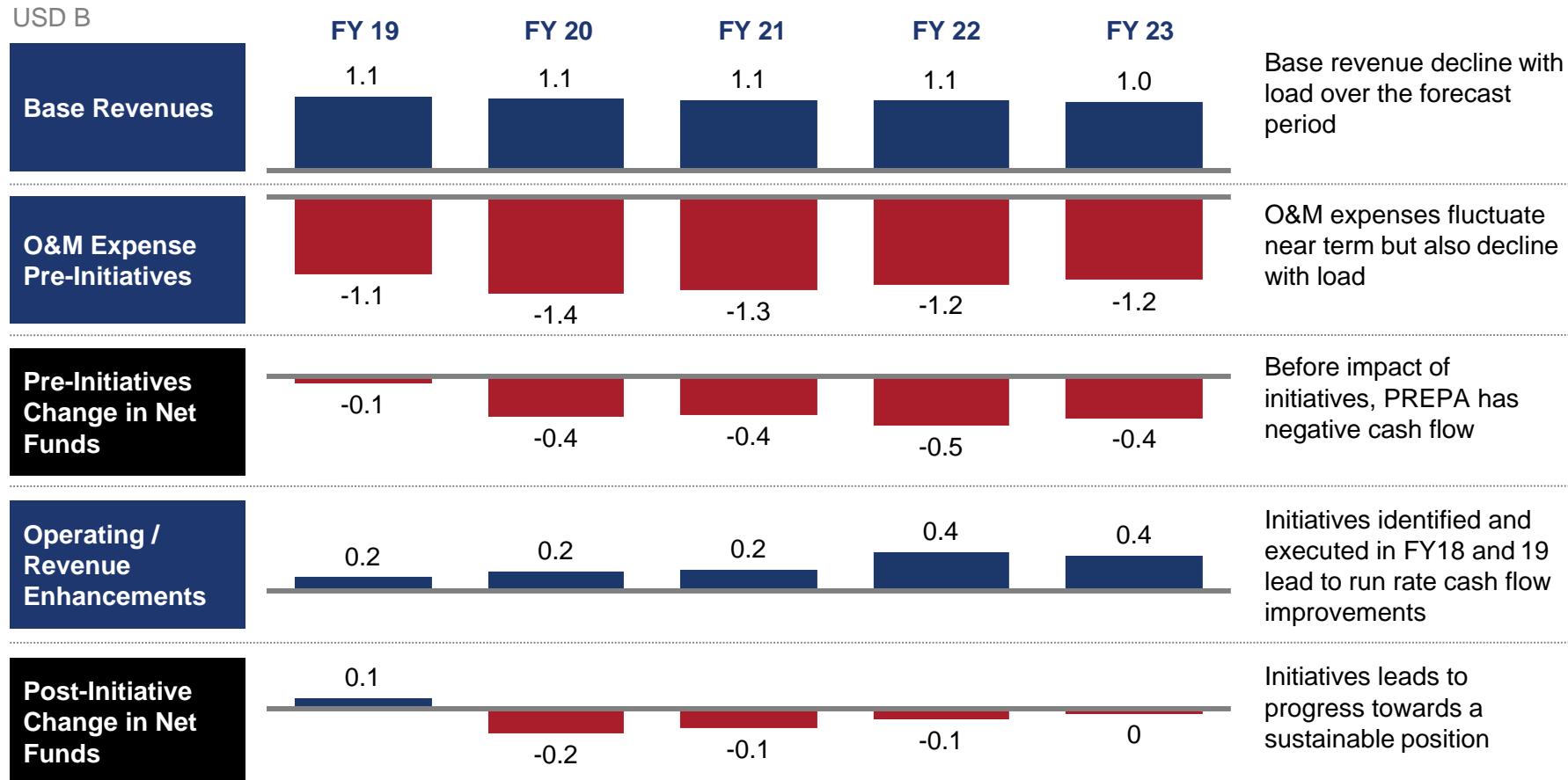
	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
Sales kWh	11,909,977,894	14,745,605,261	14,390,792,303	13,998,416,886	13,634,573,734	13,290,047,065
Overall Rate \$/kWh	\$ 0.245	\$ 0.221	\$ 0.248	\$ 0.247	\$ 0.226	\$ 0.238
Total Revenues	\$ 2,921	\$ 3,259	\$ 3,566	\$ 3,456	\$ 3,075	\$ 3,160
Operating Expenses						
Total Fuel & Purchased Power Expense	\$ 1,497	\$ 1,977	\$ 2,004	\$ 1,940	\$ 1,662	\$ 1,799
CILT and subsidies	255	273	305	298	279	289
Total Labor Expense	396	330	281	281	281	281
Total Other Operating Expenses	411	475	485	416	409	410
Total Non-Fuel Operating Expense	\$ 1,062	\$ 1,078	\$ 1,070	\$ 994	\$ 969	\$ 980
Total Operating Expenses	\$ 2,559	\$ 3,055	\$ 3,074	\$ 2,934	\$ 2,631	\$ 2,779
Adjustment for other income	(33)	(17)	(10)	(10)	(10)	(10)
Adjustment for revenue recovery	-	-	-	-	-	-
EBIT	\$ 395	\$ 222	\$ 502	\$ 532	\$ 454	\$ 391
Operating margin	13.52%	6.80%	14.08%	15.40%	14.77%	12.36%
Maintenance expense	\$ 395	\$ 222	\$ 502	\$ 532	\$ 454	\$ 391
Net income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

- Required revenue leads to rates of 23.8 c/kWh by FY23, excluding debt service and legacy pension obligations
- Assumes PREPA maintains its tax-exempt status, operational initiatives are implemented, and the planned 2015 IRP initiatives are completed with some delays



Projected Base Revenue, Funding Gap, and Initiatives

To achieve neutral funding balance under the status quo, without considering legacy debt, PREPA will need to raise rates, underspend, or finance maintenance. Access to capital requires successful Title III conclusion.



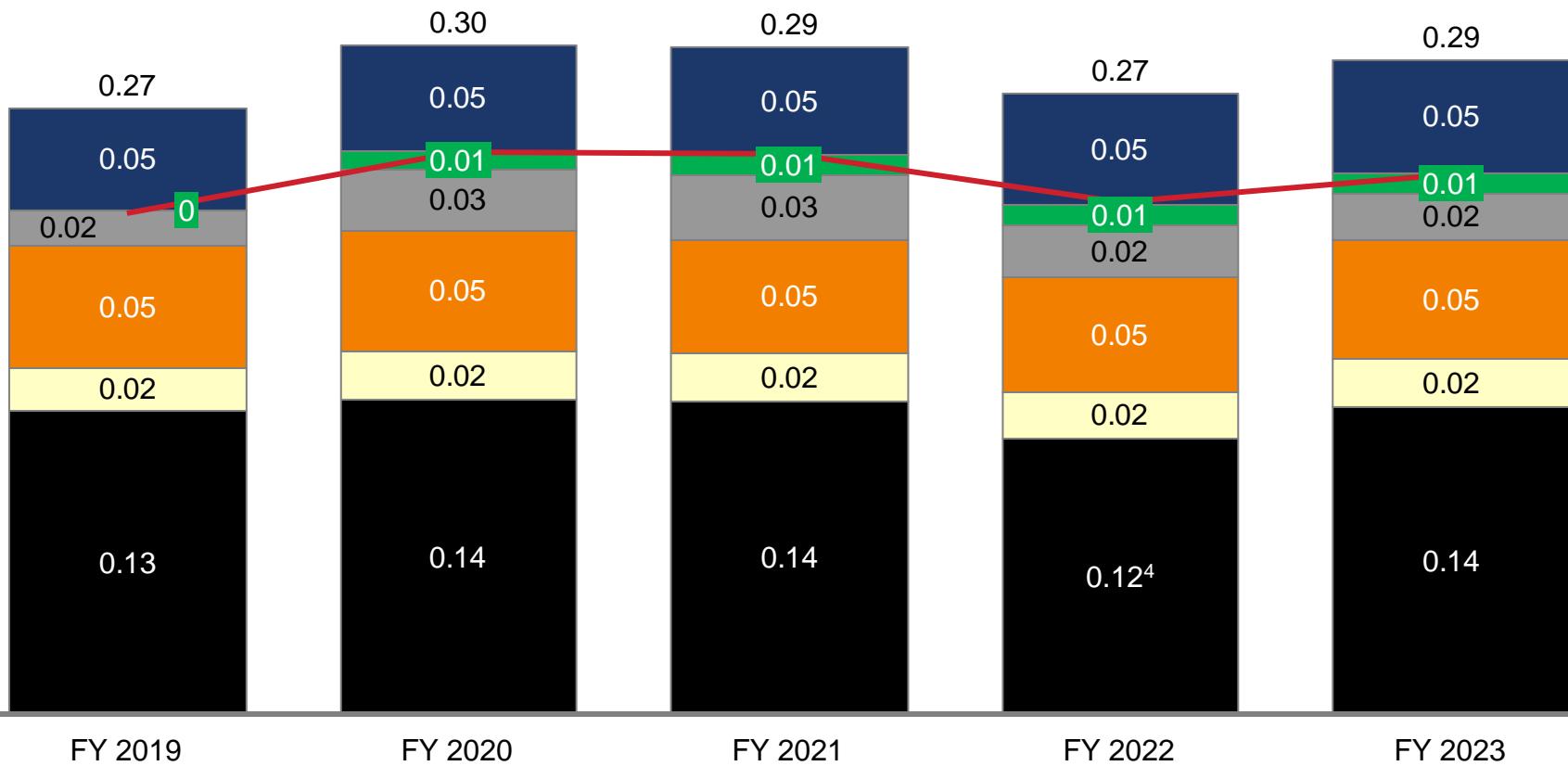
*Financial projections and cost estimates are in preliminary form and subject to change.

Even With Operational Improvements, PREPA Status Quo Full Cost of Service Rates are Projected to Reach 30 Cents per kWh

Reducing rates Requires Restructuring of PREPA Obligations and Implementation of Transformation Plan

Projected cost of service¹ rate including debt service and cost reduction initiatives identified for the 18-month period

■ Debt service² ■ MATS Compliance ■ Maintenance³ ■ Non F&PP operating ■ CILT & Subsidy ■ Fuel & PP



1 Cost of Service includes investments for MATS to replace non-compliant residual oil generation with diesel or natural gas

2 Debt Service Obligation estimated based on term out of all long-term financial liabilities at a 5% rate over 25 years; includes interest payments on Commonwealth loan

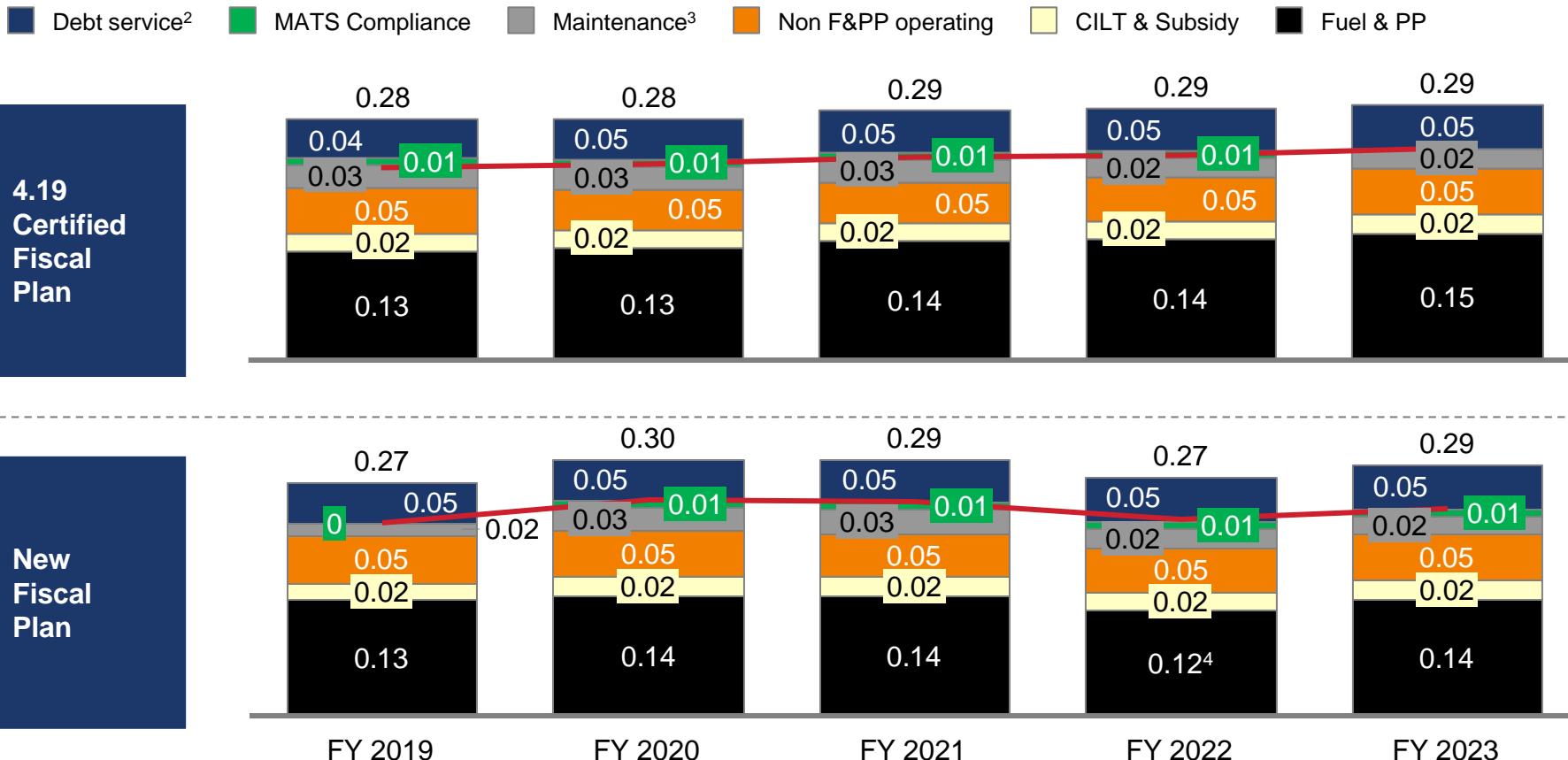
3 Maintenance expense necessary Transmission IRP project expenditures, which are expected to be revised and updated during the IRP process.

4 Decrease in rates in 2022 due to assumed new gas supply coming online; increase of rates in 2023 due to increased fuel prices and repowering of one of PREPA's combined cycle plants

Increased Fuel Prices Result in Higher Fuel and Purchased Power Costs

Since April 2018, fuel oil #6 prices have increased by an average of 34%

Projected cost of service¹ rate including debt service and cost reduction initiatives identified for the 18-month period



¹ Cost of Service includes investments for MATS to replace non-compliant residual oil generation with diesel or natural gas

² Debt Service Obligation estimated based on term out of all long-term financial liabilities at a 5% rate over 25 years; includes interest payments on Commonwealth loan

³ Maintenance expense necessary Transmission IRP project expenditures, which are expected to be revised and updated during the IRP process.

⁴ Decrease in rates in 2022 due to assumed new gas supply coming online; increase of rates in 2023 due to increased fuel prices and repowering of one of PREPA's combined cycle plants

Debt Sustainability

PREPA has had insufficient cash flows to service its debt and entered Title III in July 2017, with over \$9B in debt to creditors

- The following matrix illustrates, for varying coupon levels and pre-debt service revenue requirement excess, or net revenue, the amount of restructured PREPA debt that could be supported
- The matrix assumes a 30-year, level debt service payment structure and only one-time coverage of net revenues to debt service

Illustrative Cash Flow Available	Sensitivity Analysis: Implied Debt Capacity at 1.0x Coverage			
	\$150	\$250	\$350	\$450
Sensitivity Analysis: PV Rate %	4.0%	\$2,594	\$4,323	\$6,052
	5.0%	2,306	3,843	5,380
	6.0%	2,065	3,441	4,818
				6,194

*Values in (\$millions)

*Values in (\$millions); Assumes 30 year level debt service at 1.0x coverage to illustrative cash flow available.

- Across the coupon rate and debt capacity sensitivities above, PREPA could cover \$2.1B to \$7.8B in strategic projects and/or debt service (present value) over the Fiscal Plan Period

IV. Targets and Goals of the Transformation

A PREPA Transformation Should Achieve a Set of Ambitious Targets on Rates, Reliability, and Resiliency

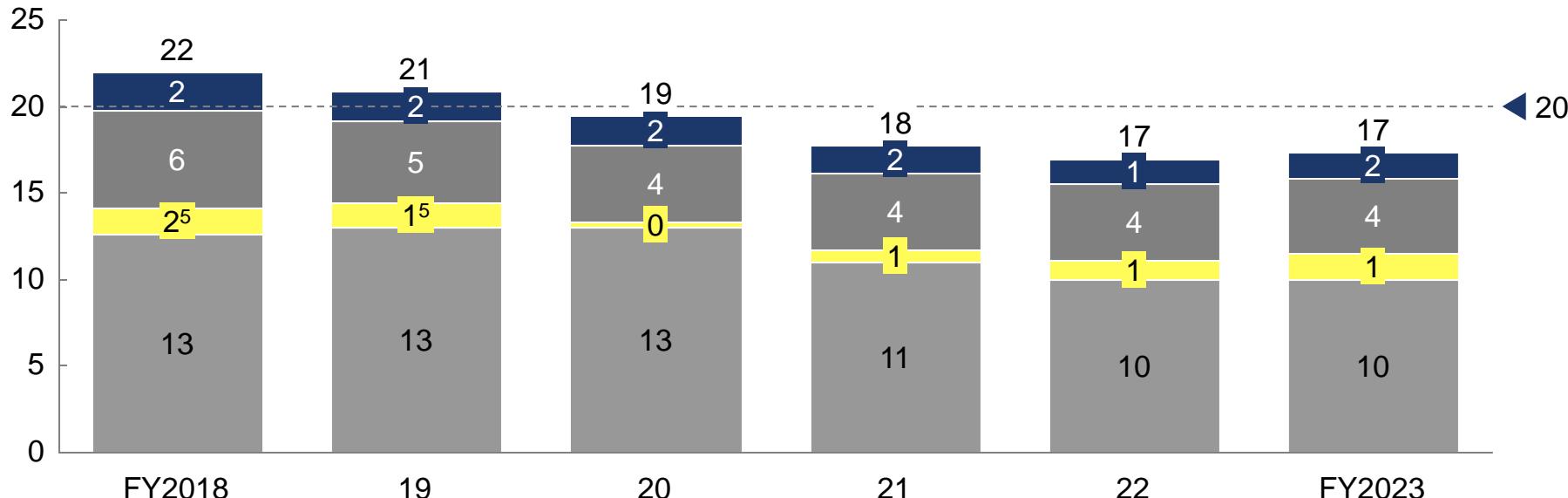
- **Rate target:** By 2023, achieve an all-in rate target of under 20 c/kWh with rates decreasing year over year, including:
 - Fuel and purchased power cost reduction target of >5c compared with steady state 2023 projections
 - Operational initiatives to reduce costs by 1-1.5c
 - Operational plan that includes cost reductions in labor, addressable costs (e.g., theft, inventory management) and utilization of new technology, phased in through FY2025
 - CILT and subsidy reform which discourages overconsumption and considers new operating environment
- **Reliability target:** By 2023, achieve reliability performance in line with mainland US utility median performance, measured via industry-standard SAIFI (average number of outages per customer) and SAIDI (average length of outage per customer) metrics¹
- **Resiliency target:** By 2023, achieve a set of recognized resiliency targets – 1 or fewer outage days per customer, 0 critical services without power for over 48 hours
- To achieve these targets, a grid modernization plan will need to be implemented that leverages federal funding and concessionaire rate-based spending to lower rates and support goals across costs, reliability and resiliency

¹ SAIFI – total # of annual customer interruptions / total # of customers served; US median of 1.04SAIDI – sum of all customer interruptions duration in hours per year / total # of customers served; US median of 1.92

Rates under 20c by 2023 Could be Achieved Through a Complete Power Sector Transformation

■ CILT and subsidies¹ ■ Labor and operations² ■ Cost of non-gen capex³ ■ Purchased power⁴

Average customer rates by year, c/kWh



- **Major drivers of transformation** case include accelerated large scale renewable and storage procurement to eliminate need for large generation capex and shifting T&D to capital recovery model⁶
- **Rate projections are not final, and are subject to optimal generation mix analysis as defined by IRP, federal funding decisions, and finalized market terms**

1 Includes \$5.8M current and \$20M beginning FY20 in annual funding for regulator, that will be 100% ratepayer funded, in line with assumptions regarding increased funding for electric utility regulator

2 Includes concessionaire incentive

3 Includes return on equity and cost of debt for new capital investments, with a 50/50 debt to equity split for funding

4 Requires a ~2.9B capital investment in new generation

5 Capex is assumed to be passed through to rates in FY18 and FY19 (prior to the concession), and rate based in FY20 (after the concession)

6 Capital recovery serves to both incentivize concessionaire and reduce annual volatility in capex expense incurred by customers

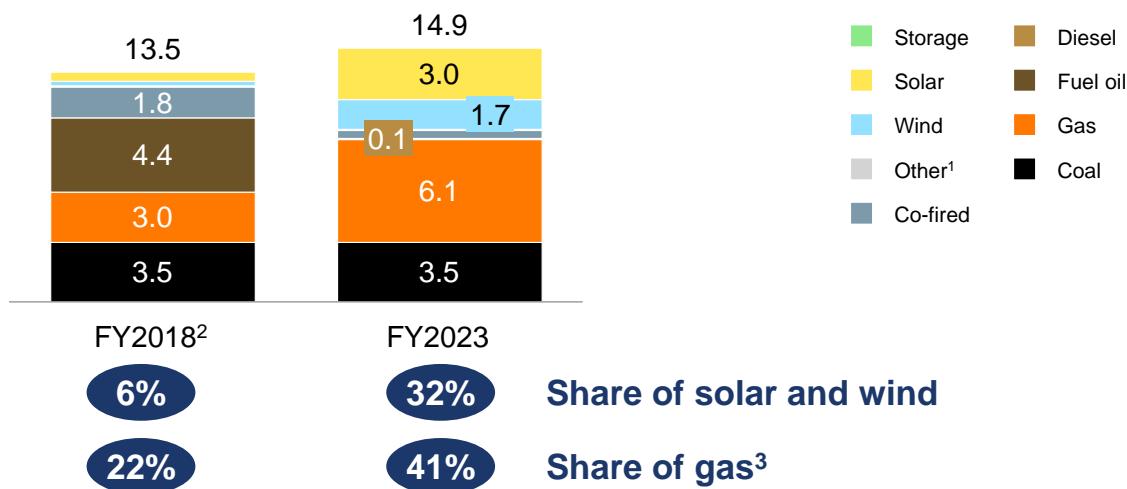
NOTE: Concessionaire incentive assumed at .1c/kWh based on operational gains; excludes debt, pension service, and interest from Commonwealth loan

COSTS EXCLUDE LEGACY DEBT AND PENSION OBLIGATIONS

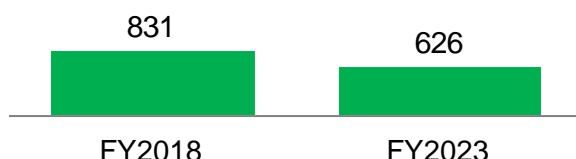


An Aspirational Least-cost Generation Plan That Shifts Fuel Mix to Lower Cost Power Sources Can Lower System Operating Costs

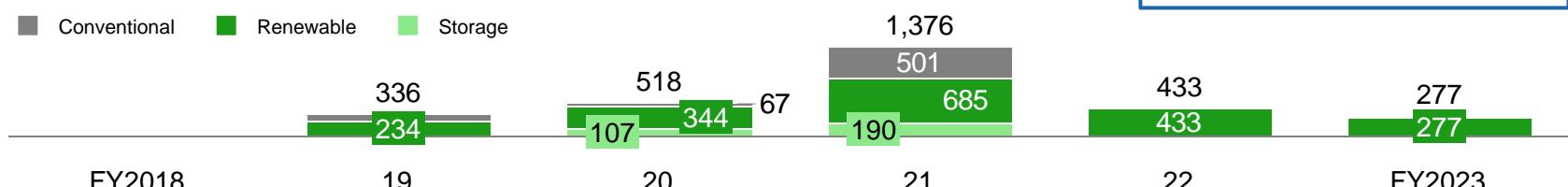
Illustrative generation mix, TWh



Resulting estimated fuel and variable O&M costs, USD M



Required capital expenditures, USD M



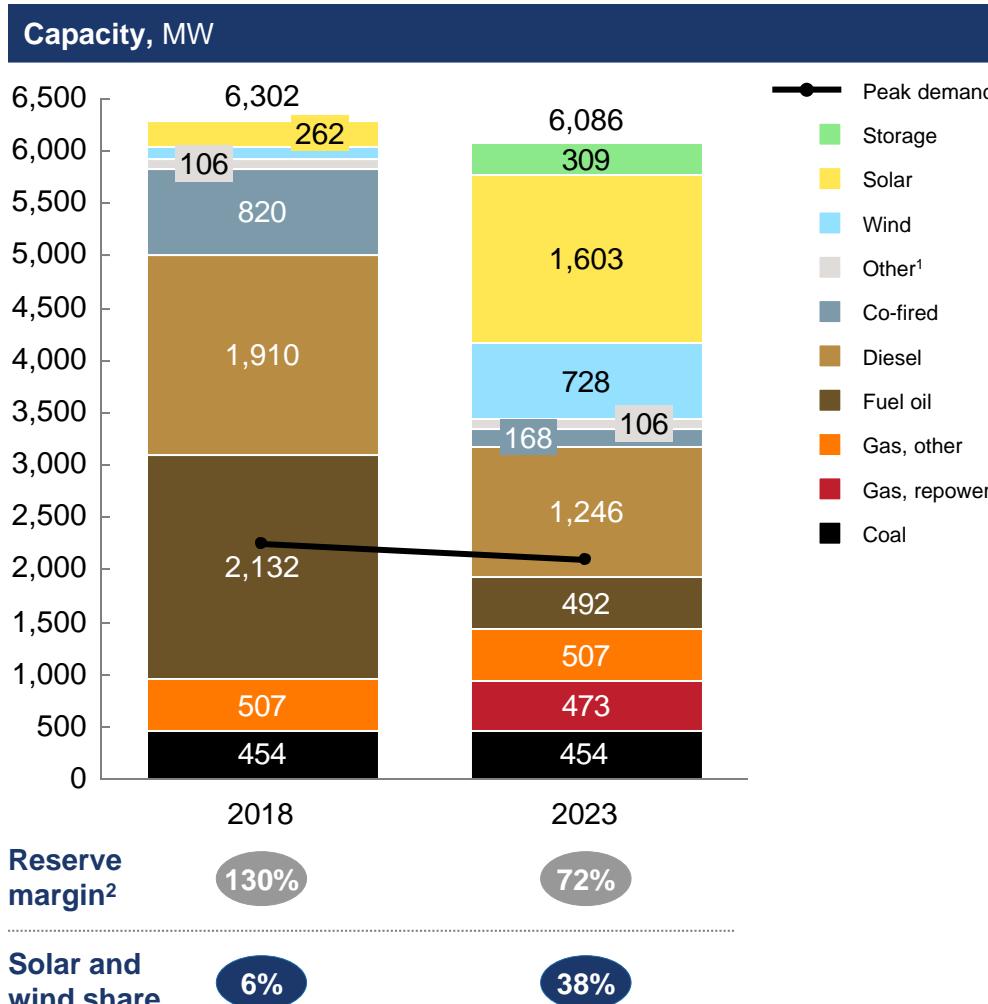
¹ Other includes waste-to-energy, hydro

³ Excluding Costa Sur co-fired

- A generation plan that builds renewables and additional gas can **cut fuel oil costs and reduce price volatility**
- ~2.9B of capital will be required to **build a renewables-oriented generation fleet and repower existing facilities to run on gas**, to be funded through private investment
- **A rebuild and modernization of the grid will also be required in the same timeframe**

Case:17-03283-LTS Doc#:4014-48 Filed:10/04/18 Entered:10/04/18 16:51:28 Desc:
Exhibit 52 Page 46 of 131

The Aspirational Generation Plan Includes High Level Reliability Planning Considerations Including a Large Reserve Margin, Diesel Capacity for Contingencies, and Storage



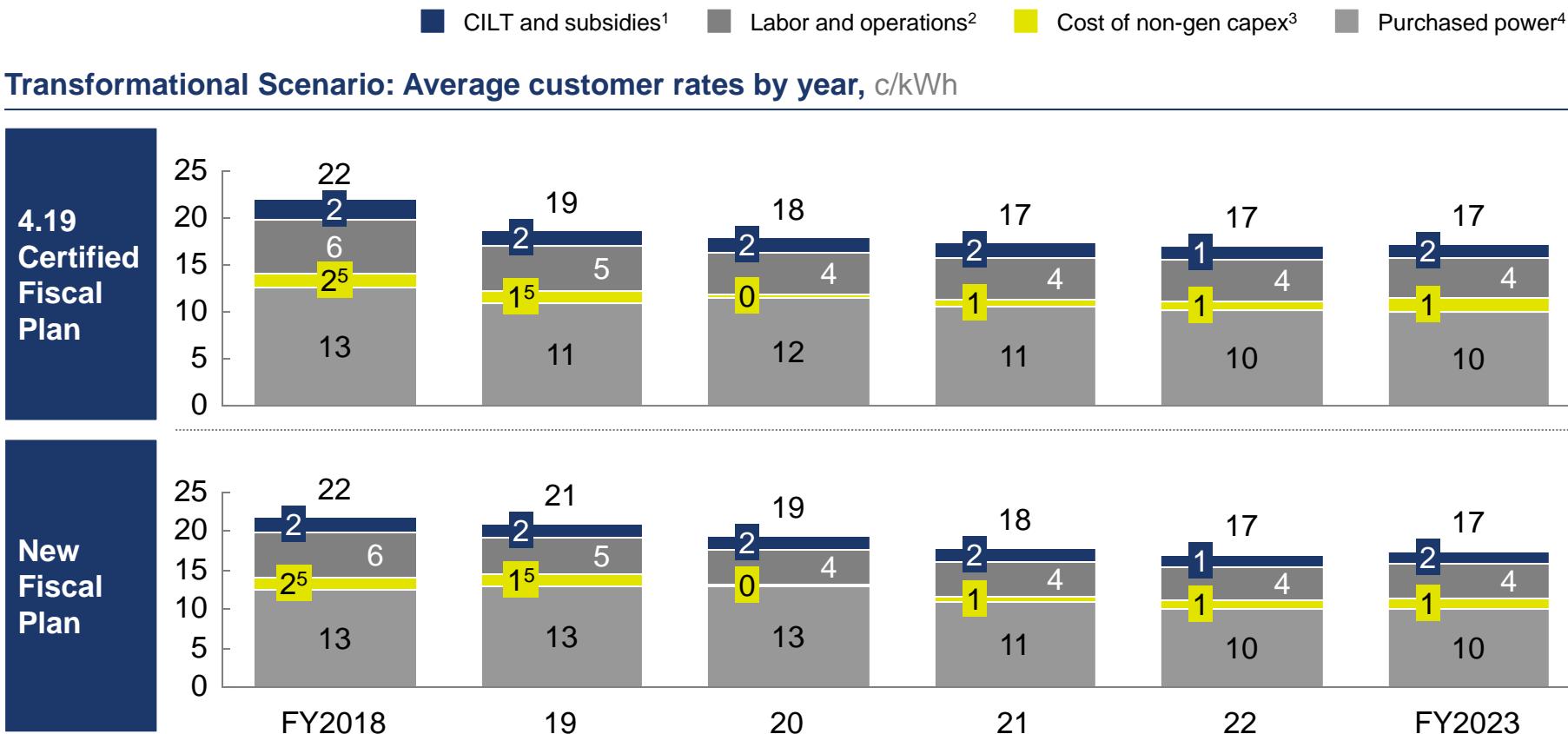
- Generation scenario projects a **reserve margin of 72% by 2023, conservative** compared with other large islands such as Hawaii (reserve margin of 30-45%)
- **Diesel plants in the North are kept online primarily for contingency and to backup flexibility** provided by batteries for renewable integration as needed
- Additional **battery storage (300 MW / 1200MWh) by 2023** is built to integrate renewables and **support system reliability and flexibility**
- Renewables sited across the island will reduce reliance on cross-island transmission lines and increase resiliency to future storms
- **Limited renewables build before FY21 (550MW)³** ensures time to build supporting infrastructure (e.g., storage) before additional large-scale build begins
- **An IRP will provide full consideration of the capacity and flexible generation needed for reliability planning considerations**

¹ Other includes biomass, hydro and waste-to-energy (biomass)

² Reserve margin based on firm capacity, which is calculated as nameplate capacity multiplied by a derating factor to reflect probability the technology is available at time of peak

³ Per 2014 consulting engineer report. Results were based on peak demand of 3,300 which has since fallen. Report noted that in planned 2015 configuration, grid could accept up to 580 MW of renewables

Oil Price Increases Result in Higher Fuel and Purchased Power Costs



- Residual Fuel Oil #6 prices have increased ~34% on average for PREPA since April 2018
- Marginal generation capacity replaces peaker oil generation with gas and renewables

1 Includes \$5.8M current and \$20M beginning FY20 in annual funding for regulator, that will be 100% ratepayer funded, in line with assumptions regarding increased funding for electric utility regulator

2 Includes concessionaire incentive

3 Includes return on equity and cost of debt for new capital investments, with a 50/50 debt to equity split for funding

4 Requires a ~2.9B capital investment in new generation

5 Capex is assumed to be passed through to rates in FY18 and FY19 (prior to the concession), and rate based in FY20 (after the concession)

6 Capital recovery serves to both incentivize concessionaire and reduce annual volatility in capex expense incurred by customers

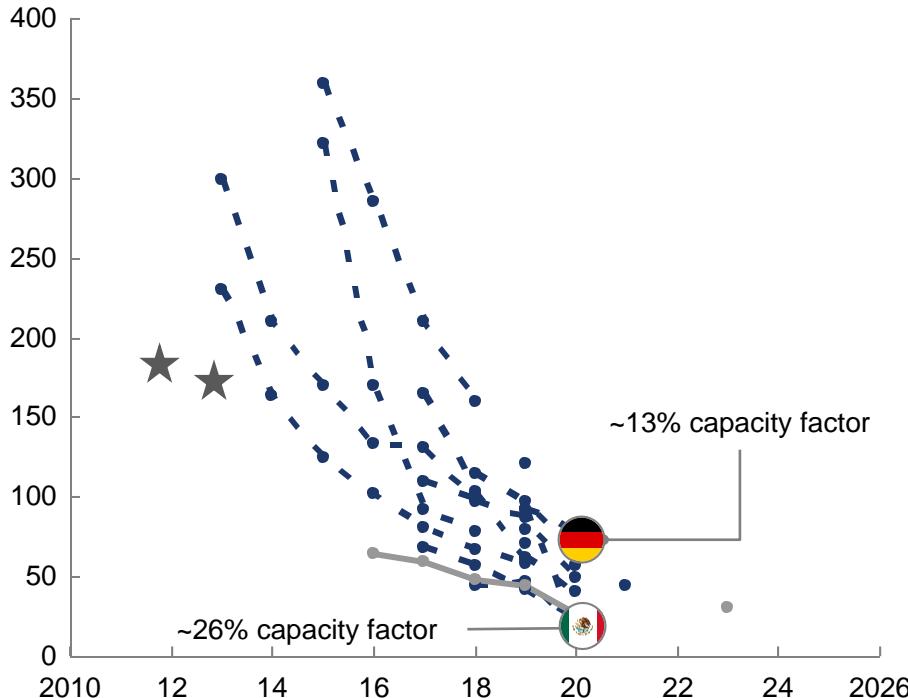
NOTE: Concessionaire incentive assumed at .1c/kWh based on operational gains; excludes debt, pension service, and interest from Commonwealth loan

COSTS EXCLUDE LEGACY DEBT AND PENSION OBLIGATIONS

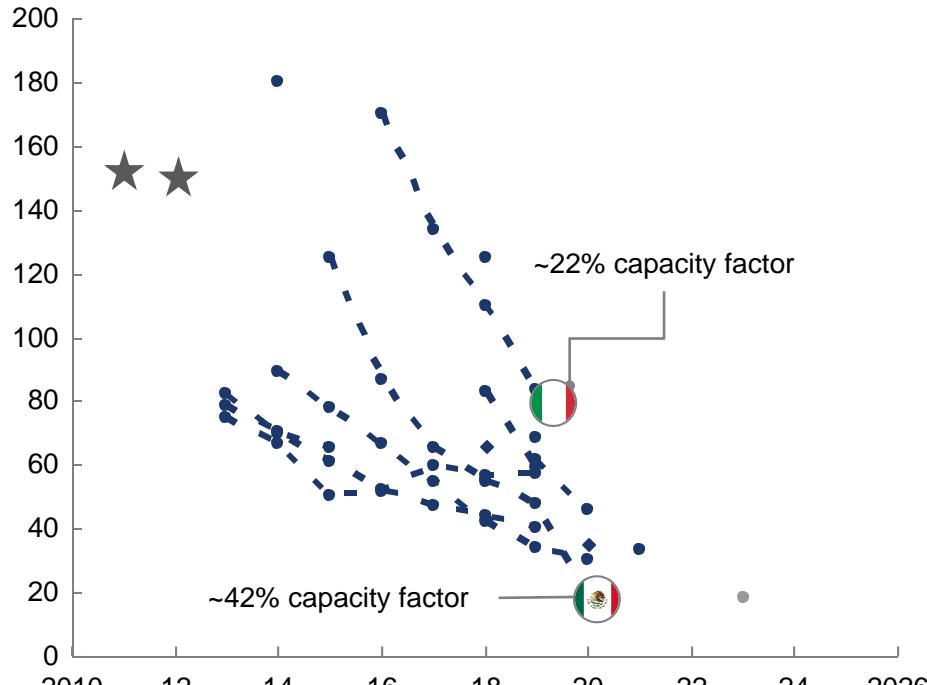
Recent Renewables Pricing Indicates That Low-cost Power is Achievable as Generation from Renewables Grows

Auction results, mainland USA
-●- Auction results, other countries
★ Puerto Rico PPA²

Leveled cost of electricity (LCOE) for solar by year¹
\$/MWh, nominal



Leveled cost of electricity for wind by year¹
\$/MWh, nominal



- While Puerto Rico's previous renewables PPA pricing was broadly consistent with global averages in 2011-12, cost of electricity generated by wind and solar going forward is expected to be substantially below prices quoted in 2015 PREPA IRP, consistent with global markets for solar and wind
- Compared across global markets, Puerto Rico is well-situated for renewables generation, with high capacity factors for solar and wind (~20-24% & ~25-34%) – meaning Puerto Rico can produce more power per unit installed, and can thus potentially realize favorable pricing

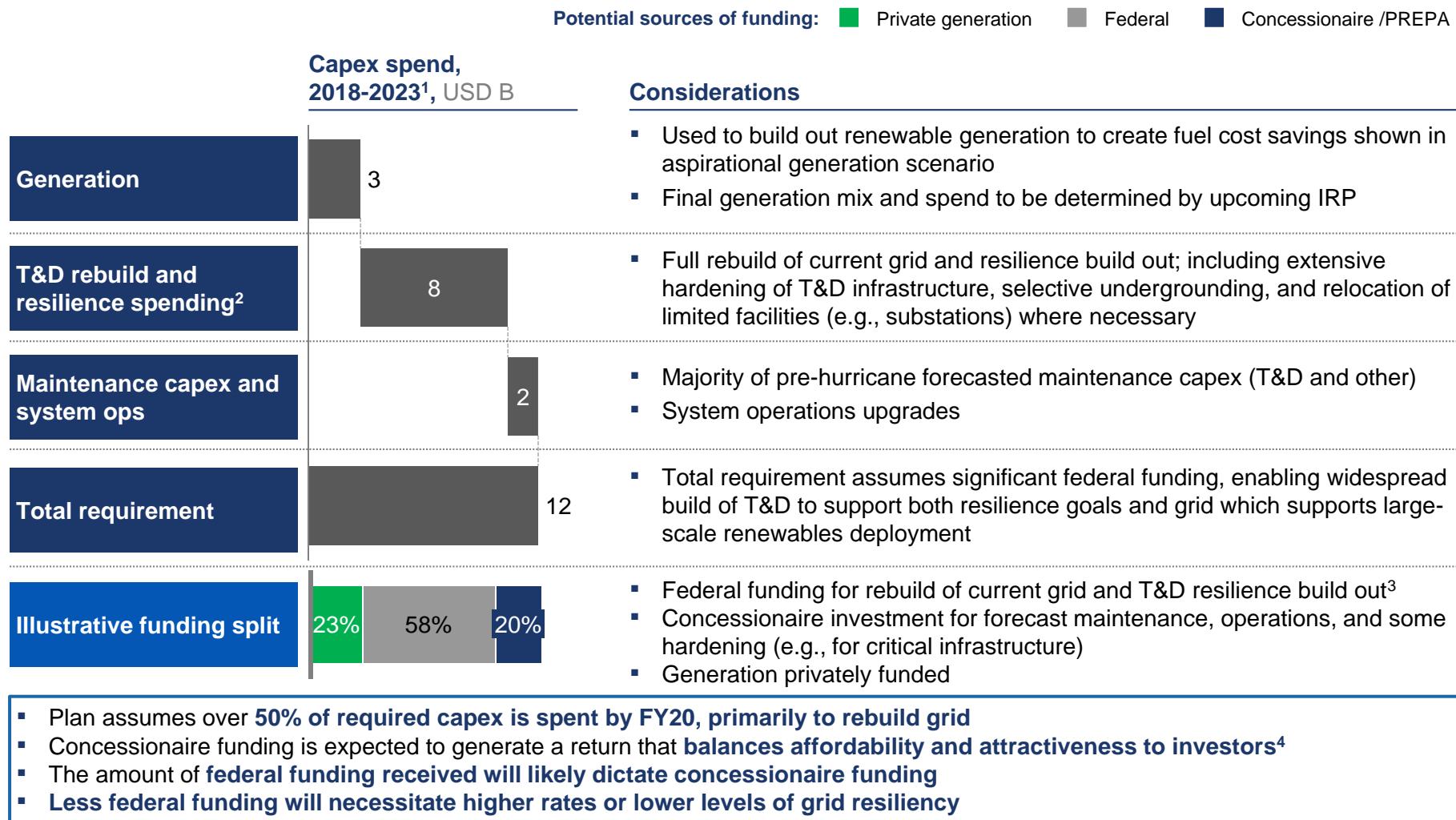
¹ Based on announced auction results (not exhaustive). Assumes commissioning date of three years after auction announcement;

Note: On the rare occasion when multiple auctions occurred within the same month, the average price of those auctions is shown. In case of ambiguity regarding the auction's date, the date when the winning bids were selected and announced was taken as the main reference.

² Based on prices listed in 2015 IRP



Transformational Rate Projections Assume Total Capex Required to Optimize Rates and Improve Reliability is in the Range of \$12B



¹ Preliminary views on generation and rebuilding & resilience costs provide context for the probable magnitude of investments

² Includes majority of T&D and other maintenance line items from previously forecast PREPA plan as this figure constituted all forecasted capex noted in PREPA model

³ Excluding system operations and some outstanding resiliency investments (e.g., critical infrastructure hardening); figure represents “floor” on funding necessary to support suggested resilience build while maintaining long-term rates which meet target criteria;

⁴ Return on new T&D capex is expected to cost ~2c/kWh in 2023

Federal Funding and Impact on PREPA

Stafford Act Emergency Funding

- Emergency Work through the initial 180 days following the Incident Period for DR-4339 (Maria) is 100% Federally funded
- The cost to restore and repair the damaged infrastructure not covered by insurance proceeds is expected to be covered by FEMA Public Assistance funds (Federal cost share of 90%)
- Puerto Rico is requesting a cost-share adjustment for FEMA's programs under the Stafford Act to 100% federal. Puerto Rico seeks Community Development Block Grant-Disaster Recovery (CDBG-DR) funding to cover the cost-share match requirements of Stafford Acts programs. Historically, either FEMA or Congress have authorized a 100% federal cost-share for large and catastrophic disasters such as Hurricane Andrew in Florida and Hurricane Katrina in Louisiana and Mississippi
- Does not cover any liquidity funding except to the extent reimbursements are received for costs previously funded by PREPA
- Reimbursement of individual expenses is subject to compliance with FEMA requirements
- Timing and amount of reimbursements are unclear but emergency funding will likely not impact transformation as it will go to PREPA to address emergency needs prior to transformation

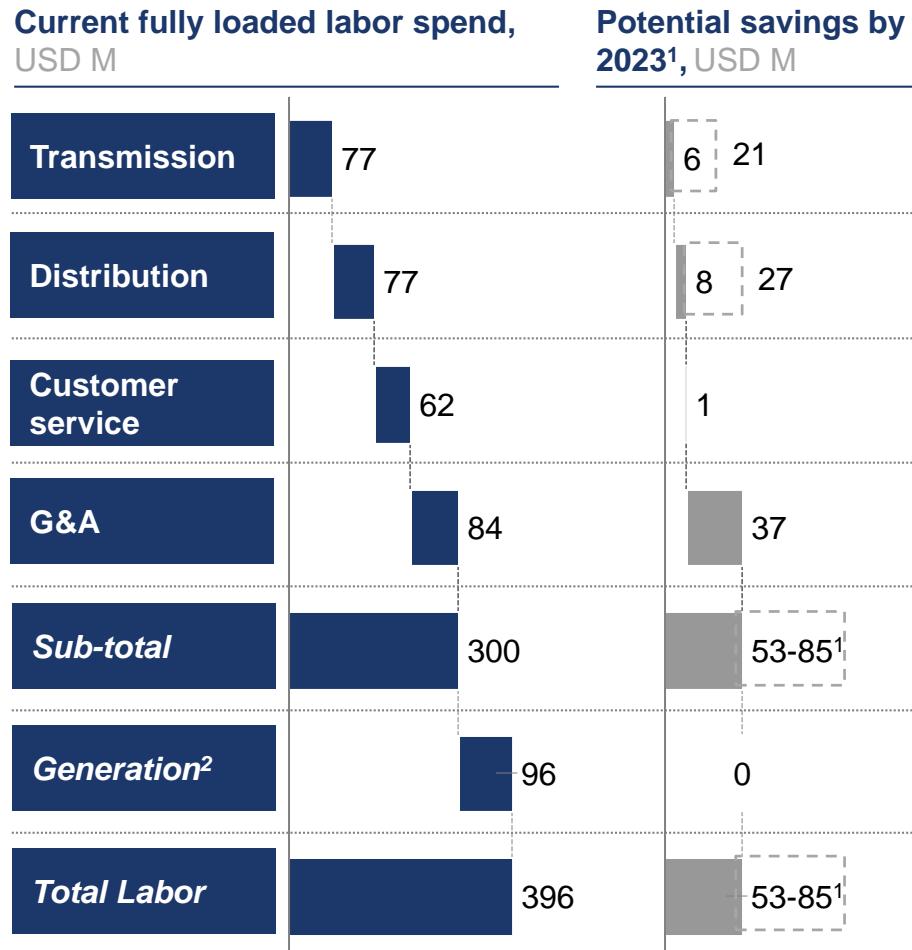
Community Disaster Loans

- Loan to carry on existing local government functions of a municipal operation that have incurred a significant loss in revenue, due to a major disaster, that has or will adversely affect their ability to provide essential municipal services
- PREPA expects that a Community Disaster Loan (CDL) either directly or through the Government of PR will be necessary for PREPA to maintain the necessary liquidity to operate for the 18-month period of continued operations required by the fiscal plan
- Timing and terms of potential CDL for PREPA are unclear
 - CDL would likely require senior position in the capital structure
 - CDL might be payable upon a sale of PREPA's assets or confirmation of a plan of adjustment unless Federal government agrees to the contrary
 - CDL can (but is not required to) be forgiven by the Federal government
 - Tenor and term still subject to input from United States Treasury

Permanent Funding Under the Stafford Act

- Permanent work to mitigate the damage to the power sector will likely be through alternative procedures provided under Section 428 of Stafford Act
- Timing and amount of funding is unclear
 - Initial damage assessment likely to take twelve months
 - Negotiation of fixed payment to Government of PR to address damage to power sector
- May be used to fund rebuild of current system or for an alternative use depending on agreement
- Timing, amount and terms will determine how the Federal funding will be integrated into plans for PREPA and the energy sector transformation generally

A Long-term Operational Plan Under an Expert Concessionaire Might Realize Labor Cost Savings Beyond Identified Operational Improvements



 Full savings potential (savings ramp over time)

- Benchmarking using costs for vertically integrated, similarly-sized utilities in the mainland US indicate a \$50-80M savings opportunity by increasing PREPA's labor cost efficiencies to median utility performance³, incremental to non-labor operational improvements identified in steady state financial projections
- Largest savings opportunity is in administrative function – T&D savings are assumed to phase in more slowly after full repair and rebuild of power grid is complete
- Top decile savings relative to coastal peer utilities exceed \$100M for categories identified
- Savings could be realized through multiple initiatives, including performance management, reduction of non-core spending, process automation), other initiatives identified through WP180 – potential also exists for private operator to enable additional savings through shared services

¹ Run rate from achieving median performance of similarly-sized utilities, from FERC benchmarking of a set of vertically integrated, coastal and / or rural mainland utilities; full savings not achieved until FY2025; pensions not included in savings build-up above ² Generation not included in benchmarking due to the differences between PREPA and other U.S. utilities in fuel mix and transportation costs ³ Utility peer set chosen from PREPA benchmarking study submitted to PREC as part of 2016 rate case Note: benchmark savings replace savings PREPA has identified in steady state projections (e.g., figures include overtime savings)

Local Market Concerns and Objectives (e.g., Rates; Reliability; Transparency)

In the post-Hurricane Irma and Maria era, local market concerns, challenges, and objectives have amplified

Traditional Concerns

Cost of energy

Quality (voltage and frequency)

Frequency and duration of interruptions/outages

Environmental

New Post Hurricane Concerns

Overall resiliency and redundancy

Increased recovery times

Operational continuity

Generation redundancy and distribution

Transmission and Distribution capacity and resiliency

These concerns must be addressed when transforming the Island's energy sector so as to:

- Minimize manufacturing losses and/or backlogs
- Increase productivity
- Avoid/minimize need for backup/redundant systems
- Avoid/minimize equipment damages
- Retain/attract manufacturing, commercial, and business operations
- Maximize capital investment, economic growth and job creation
- Avoid creating new or additional stranded and inefficiently shifted costs



Beyond Improving Rates, a Transformation Should Target Measurable Improvements in System Reliability and Resilience

PREPA 5-year target

Potential metrics		Actions				
Reliability	SAIFI (total # of annual customer interruptions/total # of customers served)	PREPA (FY17) ¹ 4.83	Low Quartile 1.32	Median 1.04	Upper Quartile 0.86	
	SAIDI (sum of all customer interruptions duration in hours per year/total # of customers served)	14.35	2.77	1.92	1.35	
	CAIDI (SAIDI/SAIFI)	2.97	2.10	1.84	1.57	
Description		Targets				
Resilience	<ul style="list-style-type: none"> Grid resiliency equal to mainland US hurricane-prone utilities: (e.g., resilience targets suggested by Sandia National Labs after Superstorm Sandy) Economic analysis of additional resiliency built into critical parts of system sufficient to deliver power during large storms and capital investment consistent with mainland US utilities 		<p>1 or fewer outage-days per customer</p> <p>0 critical services without power more than 48 hours</p> <p>\$4-5B in targeted resilience investments</p>			
	<ul style="list-style-type: none"> T&D upgrades: Harden existing infrastructure assets, relocate or underground subset of assets Microgrids: Develop microgrid capabilities for critical infrastructure Other (generation): Build out distributed generation fleet less reliant on N-S transmission loops 					

¹ Based on PREPA figures reported in 2017 compared to 2016 North American utility peer group (per IEEE benchmark report)

SOURCE: PREPA, North American utility data is the IEEE benchmark report

Base Case Illustrative End State Structures for Transformation

T&D Concession

- Delivery and retail utility functions provided by single private concessionaire using publicly-owned wires and retail service assets subject to conditions and rate and performance regulation
- Concession awarded via competitive process
- Concessionaire must make and fund necessary investments not otherwise publicly funded; title to all assets remains public
- Concessionaire receives retail rate revenues set generally under established rate standards
 - Rates recover prudent operating and supply costs
 - Rates include return of/on cost of new investments
 - Potential return on value of other assets and recovery of unrecovered investment costs at end of concession term linked to investment obligation
 - Performance on metrics and incentives can also affect rates and revenues
- IRP and Renewable Portfolio Standard (RPS)
- CPCNs for major investments not authorized by statute, franchise, investment plan, or IRP

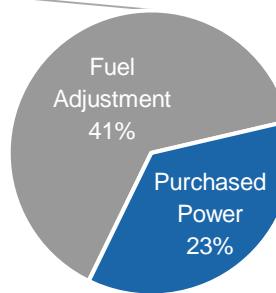
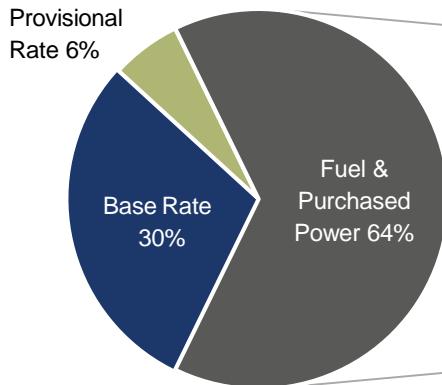
Generation sale

- New franchises created for one or more privately owned generation companies
- Generation franchises create right to operate utility scale generation and sell to delivery utility
- Franchisees can acquire useful generation assets now owned by PREPA under Title III process
- CPCNs for major new investments not authorized by statute, franchise, investment plan, or IRP including new competitive utility-scale generation
- Energy sales can occur through negotiated contracts (PPOAs) subject to market power test and backup regulation
- Migration to other market structures (e.g., periodic auctions) possible if and as future market develops
- IRP, objective performance standards, reserve requirements, and Renewable Portfolio Standard regulations apply
- Regulation of subsequent purchases / sales / reorganizations under traditional standards

Industry end structure may take various other forms (e.g., vertically-integrated utility) based on industry participant feedback during market sounding

V. Rate and Regulatory Structure

Current Rate Structure Overview



PREPA's current rate structure is composed of four primary components – Base Rate, Provisional Rate, Fuel Adjustment and Purchased Power

The 3 primary categories of customers make up 96% of revenue
- Commercial (47%), Residential (37%) and Industrial (12%)

PREC approved a permanent rate structure that has yet to be implemented that would eliminate the 11% surcharge construct and instead include direct pass through line items in customer's bills to cover CILT and subsidies

Figures in c/kWh	Residential	Commercial	Industrial	Overall	Comments
Base Rate Revenue	5.6	6.7	4.7	6.2	Intended to cover PREPA's O&M, not increased since 1989. Includes fixed charge (\$3) for clients on secondary distribution, and demand charges for clients served by primary distribution & transmission.
Provisional Rate Revenue	1.1	1.2	1.2	1.2	Authorized by PREC to cover PREPA's O&M deficit (\$222M as of August 2016) during the pendency of the permanent rate case.
Base + Provisional Rate	6.7	7.9	5.9	7.4	Total rate revenue per unit sales to cover PREPA O&M
Fuel Adjustment Revenue	8.2	8.1	7.5	8.1	Fuel commodity, shipping, and other fuel related costs plus 11% surcharge intended to cover CILT + subsidies authorized by law
Purchased Power	4.8	4.8	4.5	4.8	Cost of purchased power based on contracts plus 11% surcharge intended to cover CILT + subsidies authorized by law
Total Revenue	19.7	20.8	17.9	20.3	
Avg. Client Bill per Month	\$87.50	\$1,202	\$60,105	\$193.67	
Share of Revenues per customer class (%)	37%	47%	12%		

SOURCE: June 2017 Monthly Operating Report

Rate Design for Public Utilities Should Follow a Clear Set of Principles

Principles for all public utility rates

- Simplicity and public acceptability
- Freedom from controversy
- Revenue sufficiency
- Revenue stability
- Stability of rates
- Fairness in apportionment of total costs
- Avoidance of undue rate discrimination
- Encouragement of efficiency

Specific priorities for the Puerto Rico power sector

- 1 **Provide low-cost power** to all customer classes, without any sudden or unexpected changes
- 2 **Support reliability for all customers** by providing a sustainable source of revenue for a utility to operate and maintain a modern grid
- 3 **Enable new energy technologies** while accounting for the need to maintain the grid as a backbone of the system
- 4 **Incentivize distributed generation in specific locations** where it provides benefits to the system
- 5 **Attract capital** by providing a clear and stable path for a new utility investor to collect the revenue requirement
- 6 **Promote economic growth** through rate designs that encourage investment in industry on the island

A bridge rate case that sets rates until a concession is finalized and incorporates some rate design tools should be developed by PREPA; **a full rate case should be developed and approved by the regulator thereafter with a full public comment process**

PREPA and Future Private Participants Will Require a Reasonable Regulatory Process

The annually updated and reconciled Formula Rate Mechanism (“FRM”) proposed by PREPA bases rates on Fiscal Plan budgets, and most effectively implements the plan while preserving review and oversight

Costs	Liquidity	Sales
<ul style="list-style-type: none">▪ FRM bases rates only on real and necessary costs▪ Rates would be updated based directly on Fiscal Plan budgets▪ Rates will automatically adjust for other sources of emergency funds▪ Actual costs reviewed and reconciled after the fact	<ul style="list-style-type: none">▪ Helps address the ongoing challenges of having no access to capital markets and few reserves, while needing to make essential investments in recovery, environmental compliance▪ Avoid/minimize historical undue political influences	<ul style="list-style-type: none">▪ Annual reconciliations address changes in sales/demand, protects customers from forecast errors and remove disincentives from reaching efficiency gains and renewable energy deployment

Rate Design Challenges & Opportunities – Stranded Costs Recovery

In the event that the Transformation Plan is not successfully executed, there are well-understood ratemaking and regulatory responses used by utilities faced with serious threats of uneconomic bypass and stranded costs.

Potential Options that could be considered as part of rate design:

- **Adopt economically efficient rate designs.** Uneconomic incentives to bypass utility supply or delivery can be avoided or minimized:
 - Properly reflect fixed and volumetric costs in rates, and properly assign costs to classes
 - Move more costs, especially fixed network costs that do not change with customers' use, to fixed values than to volumetric costs to reduce volatility and discourage inefficient bypass
 - Consider unbundling delivery and supply rates and costs. This can help protect essential grid cost recovery and preserve funding for grid improvement and "future utility" goals. Rate unbundling also facilitates private generation investment
 - Rates that discount delivery prices without reducing grid costs must be carefully designed to promote the desired social goal (e.g., promoting renewable energy) without stranding grid costs or creating cross subsidies that hurt customers least able to respond, who are often low income or low use
- **Use targeted rate tools.** Customer or group-specific rate tools such as economic development rates, load retention rates, and special customer class (e.g., very high voltage, interruptible) rates can reduce the risk of uneconomic load loss and attract new load to areas where capacity (T&D and Generation) is available at little marginal cost. This helps the utility and the economy
- **Explicit stranded cost charges.** Impose non-bypassable charges on customers designed to recover identified categories of stranded costs. In some cases, a non-bypassable charge can reduce the incentive to depart as a means of avoiding responsibility for stranded costs

Summary of End State Regulatory Structure Detailed in Commonwealth Fiscal Plan

An independent regulatory framework with transparency and oversight must support the desired transformation, create investor confidence, and implement stable and accepted modes of regulation and economically efficient rates.

Challenges

- Current regulator is understaffed and unable to secure government approvals to hire new personnel and expert consultants
- Regulatory climate not sufficiently stable and predictable to attract private participation or support private investment

End state

- Independent regulators with relevant expertise, supported by staff with utility expertise
- Advisory and advocacy staff and functions strictly separated
- Sufficient, dedicated funding enabled through charter, through a combination of pass-through charges and fees
- Mandate to improve cost and reliability performance, including a broad range of ratemaking and approval tools outlined in Commonwealth Fiscal Plan
- Post-Title III, the regulator will approve new rate case and assume all regulatory responsibilities including approval rights for issuance of new debt
- FOMB maintains limited rights while PREPA continues to remain a covered entity under PROMESA
- The regulator will need an annual budget of \$20-\$30 million dollars¹, which is roughly equivalent to a surcharge of \$0.0015 per kWh

Transition

- Transition to new regulatory structure immediately, so that structure and funding are established before bids are solicited for the transaction
- The Puerto Rico Energy Commission's authority and funding will have a transition period to account for FOMB authorities pre-transformation
- FOMB approves a capital plan, budget, and revenue requirements, the issuance of new debt and the structuring of existing debt through the plan of adjustment, and contract amendments and terminations
- Regulator authorizes bridge rate in line with certified budget to maintain PREPA during transition
- The regulator will approve the FOMB-guided IRP, but any budget / debt service implied by the current rate case will be superseded by the FOMB-approved budget
- The regulator will be able to hear cases pertaining to microgrids and distributed generation development during the transition period

¹ Estimate in line with other jurisdictions; the Hawaii Public Utilities Commission had revenues of \$19M in FY2017 to serve a population of 1.4 million. The New Fiscal Plan for PREPA assumes \$20 million annual funding through rates beginning in 2020 for the future state energy regulator

Rate and Incentive Tools

Proven regulatory tools can incentivize and promote investment, efficiency, and high performance in Puerto Rico in the context of well-understood established regulatory models. These tools can be included in the franchise / concession structure and thereafter by the regulator. Particular tools can be chosen and refined as investor discovery proceeds and as other policy, market structure, and future investment needs solidify.

Performance and Investment Metrics	<ul style="list-style-type: none">▪ Direct adjustment of revenues and returns has been successfully used to incentivize performance and support development of selected assets and/or projects. Operational performance metrics can include both rewards and penalties, especially where the metric is strongly under the utility's control.▪ Examples include FERC incentive rates for certain transmission projects, ROE/ROR incentives for achieving designated operational and economic KPIs (e.g., IL) and/or "output" incentives (e.g., UK).
Multi-Year Rate and Investment Plans	<ul style="list-style-type: none">▪ Formal mechanisms that set or cap rates or revenues over time taking into account attrition and inflation to target innovation and efficiency gains. Less formal versions include rate steps or freezes. They aim to offer greater regulatory certainty to customers and utilities while increasing incentives to control costs, make specific investments, and innovate.▪ The UK, Ontario, and more than fifteen US states (e.g., GA, CO, CA, NY, IA) have used versions of multi-year rate plans with positive effects on efficiency and cost containment.
Decoupling/Revenue Adjustments	<ul style="list-style-type: none">▪ Mechanisms to offset or mitigate the impact on utility revenues and cost of attrition caused by, e.g., economic turmoil, energy efficiency and demand response efforts, or DER penetration, especially where there are no parallel reductions in utility costs.▪ Various forms of decoupling have been widely adopted across mainland jurisdictions, especially in jurisdictions with strong commitments to energy efficiency and demand management (e.g., NY, CA, MD, OH, IL) and decoupling forms a part of the UK regulatory scheme.
Trackers and Formula Rate Mechanisms	<ul style="list-style-type: none">▪ Mechanisms to periodically adjust rates or allowed revenues in response to changes in costs and/or sales, especially where those changes are significant and unpredictable. May be symmetric and coupled with performance incentives and prudence review. Can also be used to retroactively reconcile rates and revenues to account for unexpected changes or emergencies.▪ Variations include full formula rates (e.g., FERC, IL) and targeted capital and expense trackers used in numerous states and provinces and in Puerto Rico in the existing CILT, subsidy, and F&PP riders.

VI. Resiliency & Resource Planning

The Puerto Rico Energy Resiliency Working Group (ERWG), led by NYPA, Prepared a Grid Resiliency Rebuild Assessment

- Immediately following Hurricane Maria, PREPA set out to review and assess damage to the system and began emergency restoration
- Damage assessment and emergency restoration efforts were supported by NYPA, ConEd, and USACE. Further damage assessment and resiliency rebuild estimates were developed by The Puerto Rico Energy Resiliency Working Group, comprised of the following members:
 - New York Power Authority, Puerto Rico Electric Power Authority, Puerto Rico Energy Commission, Consolidated Edison NY, Edison International, Electric Power Research Institute, Long Island Power Authority, Smart Electric Power Alliance, U.S. Department of Energy, Brookhaven National Laboratory, and the Public Service Enterprise Group
- The Puerto Rico Resiliency Working Group estimate for the cost to rebuild with minimum resiliency to withstand extreme Category 4 storms and sufficient design margin to ensure high survivability for Category 5 events are summarized below
- Absent substantial federal funding for the rebuilding effort, the Energy Resiliency Working Group recommendations cannot be implemented

- The ERWG Grid Resiliency Report was part of the Government's formal request for supplemental Federal assistance
- Although Puerto Rico anticipates significantly more Federal Disaster Relief Assistance, out of the \$17.6B for Federal Disaster Relief for the Rebuild of the Electric Grid, the Puerto Rico Government currently estimates that \$13.7B of federal assistance would be available for repairs and improvements of the electric system.
- As of March 2018, FEMA has allocated \$1.953 billion to USACE to execute the Mission Assignment for power grid restoration

Rebuild Recommendations ¹	Total (millions)
Overhead Distribution (includes 38kV)	\$5,268
Underground Distribution	\$35
Transmission - Overhead	\$4,299
Transmission - Underground	\$601
Substations - 38kV	\$856
Substations - 115kv & 230kV	\$812
System Operations	\$482
Distributed Energy Resources	\$1,455
Generation	\$3,115
Fuel Infrastructure	\$683
Total Estimated Cost	\$17,606

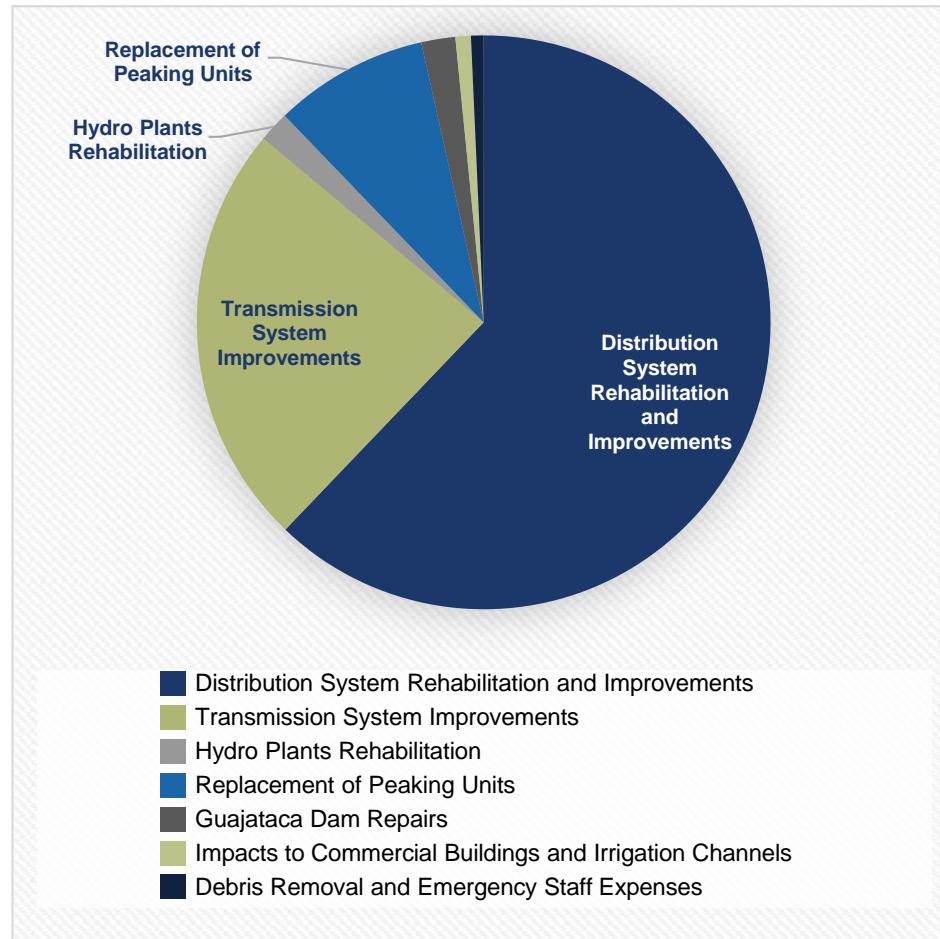
¹ Note: Each line item includes a 30% scope confidence escalator. Final cost estimates require multiple engineering studies and an updated IRP.

SOURCE: Puerto Rico Energy Resiliency Working Group report, November 2017, USACE

Although Puerto Rico anticipates significantly more Federal Disaster Relief Assistance, it included \$13.7B in assistance for Electric Power Infrastructure

- The preliminary estimate of \$13.7B included in the Central Government Fiscal Plan is based on the following breakdown, which PREPA is in the process of evaluating and comparing to other third party estimates

Category	Amount (M)
Distribution System Rehabilitation and Improvements	\$8,374
Transmission System Improvements	\$3,222
Hydro Plants Rehabilitation	\$235
Replacement of Peaking Units	\$1,173
Guajataca Dam Repairs	\$258
Impacts to Commercial Buildings and Irrigation Channels	\$117
Debris Removal and Emergency Staff Expenses	\$95



Grid Resiliency – Potential Grid Improvements

The ERWG made recommendations for improvements and replacements that cannot be achieved by PREPA absent substantial federal funding.

Hardening & Resiliency Executive Summary

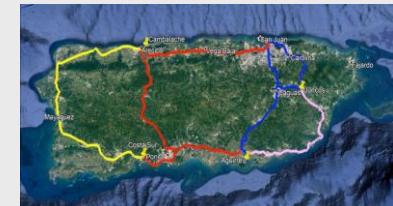
- **Generation:** Relocate smaller coastal or river-located facilities, use of load frequency control, build back renewable energy sources, and integrate DER
- **Transmission:** New monopole towers, high strength insulators
- **Substations:** Defense-in-depth (multilayered) flood protection
- **Distribution:** Use of concrete and galvanized steel poles, new backup control center
- **System Ops:** Use of microprocessor-based devices and proven control system technologies

Generation Related Improvements

- **Aguirre Plant :** Test and inspection; base repairs; spares replacement; storm hardening; install H-class machine at Aguirre to address MATS compliance, system stability, and fuel diversification issues
- **Palo Seco Plant:** Installation of dual fired F-class machine to address MATS compliance, system stability, and fuel diversification issues; storm hardening
- **Other Plants:** Test and inspection; base repairs; spares replacement; storm hardening

Transmission Related Improvements

- Relocate 230 KV Transmission lines to existing highways (see image)
Replace poles for higher wind rating; move high risk lines underground
Straighten and grout existing poles or replace with deeper subgrade and/or engineered foundations
- Improve insulators, particularly in salt contamination areas



Distribution Related Improvements

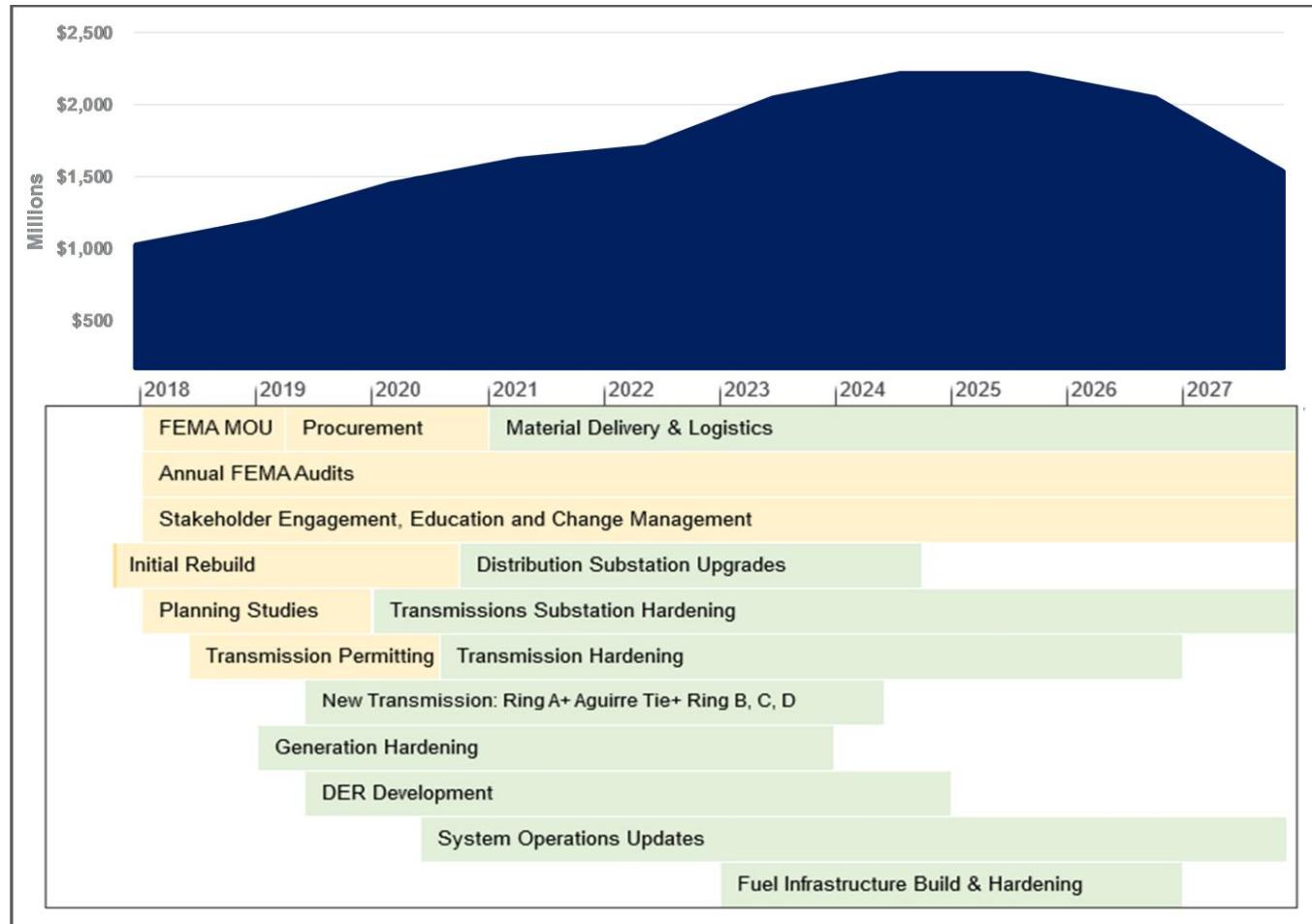
- Replace poles for higher wind loading, install breakaway service connections, install fully insulated wire, relocate distribution away from transmission, selectively underground distribution
- Replace poles with deeper subgrade support, selectively underground in areas with water-driven debris
- Relocate lines to accessible street level, selectively replace overhead with underground
- Add automated switches with FDIR capability
- Improve insulators, particularly in salt contamination areas

SOURCE: Puerto Rico Energy Resiliency Working Group report, November 2017



Timeline of Recommended System Improvements by the ERWG is Conditioned Upon Receipt of Necessary Federal Funding

The ERWG laid out a timeline for implementation and funding of recommended system improvements over time. The timeline ignores any constraints on funding, and provides guidance on estimated sequencing and duration of activities.



Activities underway or expected to begin in early Q1 2018:

- Rebuild and repair of salvageable substation equipment, fences, communications equipment, and restoration of physical security.
- FEMA audit (A-133 or single audits) preparation required for any entity that expends \$750,000 or more of federal assistance. Filings for 2017 expenditures must be completed by September 30
- Transmission studies, engineering assessments, DER site studies, and other planning studies

SOURCE: Puerto Rico Energy Resiliency Working Group report, December 11, 2017



Resiliency and Contingency Planning

Resiliency requires contingency planning for funding, assistance, and insurance

- PREPA should seek to obtain **external funding** for any amounts related to restoration services. The principal source of funding that PREPA should pursue for cost-share matching amounts required under the Stafford Act is from a Community Development Block Grant (specifically CDBG-DR-2018) from the U.S. Department of Housing and Urban Development (HUD).
 - Should CDBG funding of approx. \$200m not be available for FY19 cost-share, PREPA may have no option but to reallocate the majority of its FY19 maintenance budget of \$227m and **forego maintenance of generation and T&D assets**, and/or pursue modifications or expansions to the existing loan with the Central Government, and/or attempt to secure DIP financing from private parties, which may require changes in the PREPA rate structure to provide an agreeable security package and/or adequate debt service coverage
- PREPA should seek to **enter into mutual aid agreements** with mainland utilities and leverage their existing relationship with the Southern State Energy Board (SSEB) and the New York Power Authority (NYPA) prior to the calendar year 2018 hurricane season
- PREPA should assess the status of its available **insurance** programs and ensure that all assets are **adequately protected at cost-effective rates**

Signing Mutual Aid Agreements Could Accelerate Future Recovery Timelines

MOUs provide mutual aid between PREPA and another utility in times of need

PREPA will sign memoranda of understanding (MOUs) to document goodwill with other utilities as non-binding agreements for mutual aid

- PREPA can prepare for future natural disasters with MOUs **that trigger during times of greatest need**, such in the case of a future hurricane
- PREPA **could receive loan** of personnel, equipment, and other resources from other parties within agreement
- Conditions and payment for aid varies depending on agreement:
 - Can defer payment under assumption mutual aid will be reciprocated
 - Can agree on terms of payment prior to being provided
- Puerto Rico is currently a **member of the Emergency Management Assistance Compact** (EMAC), a national interstate mutual aid agreement
 - Puerto Rico requested and received emergency management personnel from CA, LA, and MA during the aftermath of Maria
- PREPA **can explore MOUs** with other utilities (e.g., NYPA) to:
 - Request utility-specific aid such as equipment or restoration personnel in the event of another hurricane
 - Craft temporary solutions to current concerns (e.g., limited # of staff in PREC)
 - Share expertise and best practices with mainland utilities



PREPA



Partner utility (e.g., NYPA)



Puerto Rico
Electric Power
Authority

Revised Integrated Resource Plan (“IRP”) Overview and Timeline

Background

- PREPA was required, under Puerto Rico Act 57 of 2014, to prepare an IRP that analyzes and identifies its preferred strategy for satisfying system requirements over the planning horizon
- Main factors addressed in the existing IRP as approved by PREC are reliability, stability, environmental compliance, and future renewable generation levels under market, regulatory and economic constraints
- The best performing portfolio is recommended taking into account cost, reliability, and environmental considerations based on the results of system and production cost modeling in PROMOD and PSSE

PREPA will analyze system requirements and market trends to develop a new capital plan

- A re-examination of PREPA’s system and capital plan is needed in light of factors like the impacts of Hurricanes Irma and Maria, lower demand forecasts, increased estimates for distributed generation, and rapidly declining costs for renewables, in order to ensure that planned investments are still necessary and cost-efficient
- The need to re-build the system due to the damages caused by Hurricanes Irma and Maria represents a unique opportunity to leverage locally available renewable energy sources and battery storage capacity, and lower dependence on external fuel sources
- PREPA issued a Request for Expressions of Interest at the end of 2017 to garner interest from qualified consultants. PREPA is currently working towards completing the IRP by September of 2018 pursuant to the following timeline
- **The IRP process will be open and transparent to the public. Specifically, the assumptions, approach, and methodology driving the IRP model should be made public so that third parties can understand inputs to each scenario, methodology and be able to participate and attend hearings to understand tradeoffs and decisions driving approval of the final capital plan and revenue requirement.**

IRP Process	Required Actions / Approvals	Date
RFP to Governing Board	Sent – Complete	2/27/2018
RFP to OCPC and OMB	Sent – Complete	2/28/2018
RFP Out to Bidders	Sent – Complete	3/10/2018
RFP Responses Due	Responses Received – Complete	3/24/2018
Contract Approved and Signed	Contract Approved and Signed – Complete	6/14/2018
IRP Stakeholder Engagement Sessions 1-3	July Stakeholder Engagement Session - Complete	Jul, Aug, Sep 2018
PREC IRP Prefiling Conference		8/14/2018
IRP Complete		9/28/2018



Targets/Goals for the IRP

A NEW IRP – Focus, Goals and Targets

- PREPA will undertake an updated integrated resource plan (IRP) commencing in Spring 2018 for completion in September 2018. The purpose of this guidance outline is to understand the objective function(s) that the IRP will be optimized against.
- These guidelines will help articulate the IRP objective function(s), the relationship between the IRP and the fiscal plan, and how the regulatory process intermediates between the two.

Overview of the Process:

- The integrated resource plan provides choices between options that are articulated as constellations of generation, transmission and distribution asset deployments over time to meet the desired objective functions and the tradeoffs between these options. PREPA will recommend asset deployment options that represent the most economically efficient, on a risk adjusted basis, approach to meeting the desired objective functions with the least amount of undesired outcomes.
- The regulatory compact, defined as the set of regulator rules that define rates, asset ownership, business model, utility services and their market structure arbitrate the translation of the integrated resource plan into both the expected rates, what costs the utility can recover, what services it can offer, and therefore, its expected financial condition. **Given the uncertainty on the future regulatory compact, therefore, it is untimely to use rates as a metric for an IRP at this juncture.**

IRP Customer Centric Approach:

PREPA's vision sets forth a customer centric approach as one of the core vision for the future elements, along with reliability. At the most fundamental level, there are clearly distinct customer segments that place dramatically different values on power quality, power reliability and resilience. All customers demand the same levels of reliability and resiliency but different levels of power quality, depending on the end use equipment. In other words, service levels are directly dependent on the end use for the customer. As for all IRPs, the customer requirements for power reliability, quality and resilience set some of the most critical criteria for the IRP's objective function.

PREPA has generally outlined the following regarding customer requirements, and the objective function for these IRP elements:

- **Large commercial and industrial (C&I) customers:** particularly those in manufacturing (i.e. pharmaceutical sector) and hospitality experience significant business costs if power supplies are interrupted or are not of sufficient power quality. Therefore, the objective functions for these customers may be a N-1-1 design for the power delivery where one contingency does not lend to a total loss of service or the ability to meet peak demand
- **Rural areas:** the long duration of power outages is unacceptable. The objective function for these customers may be a maximum of 3 days without power for a catastrophic event, and under normal condition have N-1 reliability design criteria.
- **Critical Facilities:** identified in the recent DOE (Build Back Better) report, the objective function is zero critical facility days without power when faced with a total power failure, with N-1-1 reliability under normal operating conditions. Critical facilities include Police, Fire, EMS & Medical facilities with the ability to quickly connect mobile diesel generator when faced with total power loss conditions to make them operational under catastrophic failure conditions.
- **All remaining customers:** the objective function is a maximum of 3 days without power for a catastrophic event, and under normal condition have N-1 reliability design criteria.

Targets/Goals for the IRP

Focus on Meeting Customer Objectives while Minimizing Total System Costs

- PREPA's vision includes Financial Viability and Economic Engine. The IRP objective function of minimizing total system costs directly impacts these vision elements.
- The appropriate economic objective function is the total system costs, which measures all the utility and customer resources necessary to achieve the reliability, resilience and power quality objective function of the different customer segments. Total system costs include both capital, operating expenses and fuel, and given the volatility of fossil fuel, is presented on a risk adjusted basis.
- Under PREPA's cost structure, most costs (85%) recovered in rates are for fuel or purchased power. Thus, the focus of the IRP on addressing this element of the cost structure.
- There are several premises regarding the ability to reduce the fuel and purchased power total system cost significantly over the next 10 years. PREPA's view is that an IRP **objective function target would be a 30% reduction in fuel and purchased power costs vs. the business as usual case, with an additional reduction of 20% in the volatility of these costs.** Four major opportunities underlie this perspective:
 1. Reduction in required reserve margin to 50% would allow PREPA to mothball its least efficient units with the concomitant reduction in fuel costs
 2. Energy efficiency and demand response when compared with other island rural and metropolitan areas is largely untapped and reduce demand for power at typically 3 to 5 ¢/kwh, as the cost of saved energy, as well as provide dynamic load response as increased renewables enter the system or in response to system perturbations.
 3. New renewables, both intermittent and with storage, under competitive bidding process should have total delivered costs that is below the cost of oil based electric production. Solar plus storage utility and distributed scale power can be on line within two to three years—faster than most conventional generation.
 4. LNG and modernization of generation plants was shown in the 2015 IRP to be a lower cost alternative than continued reliance on oil fired steam plants. Recent market experience in comparable jurisdictions shows that major oil companies and LNG suppliers are willing to offer 10-year fixed price (hedged) contracts at prices that would deliver power at the rate of 10¢/kwh. In addition PREPA has to comply with the MATS regulatory mandate. Siting of these facilities and its impact must be studied in detail in addition to the cost savings.
- Each of these major opportunities reduces fuel costs and volatility. **That said, caution is warranted as these targets are subject to be proven or disproven by the IRP.**
- Capital requirements for generation, transmission and distribution infrastructure may increase from the business as usual case due to the need for additional physical assets to meet customer reliability, resilience and power quality needs. Since these assets could be on either the utility or the customer side of the meter, it is not yet possible to provide a credible estimate of what that increase would be.
- It is possible to recognize that the increase in capital cost is offset by the reduction in business interruption cost. Based on the aftermath of Hurricane Maria, PREPA will draw upon this experience to estimate the cost of interruption so that the capital costs can be compared against the improvement in system resilience.
- Therefore, the IRP should measure the reduction in cost of interruption at system wide level. Given the weakened state of the entire PREPA system and its vulnerability to another hurricane disruption, PREPA assumes the cost of interruption is reduced by 60% from business as usual case, particularly if the customer resilience criteria are met.

Targets/Goals for the IRP

Ensuring Sustainability and Protection of the Environment

- PREPA's vision sets forth PREPA being a model for sustainability as one of the core visions for the future elements. Many IRPs explicitly set the sustainability goal as a regulatory Renewable Portfolio Standard target, and make this an explicit objective function that the IRP must meet as it determines the optimal portfolio mix. This is because the RPS is a regulatory mandate. Accordingly, the IRP should set a minimum of 20% by 2030 objective function, measured as renewable generation/total generation, with distributed renewables treated as a reduction in load, unless the excess power is fed back to the grid for a small incremental cost.
- PREPA must also meet environmental compliance standards, particularly MATS, as an objective function that is a matter of compliance. In the near term, this tends to drive toward fuel switching, which depending on the fuel, can either create a savings or additional costs.

Creating Customer Value

- Holistically, the PREPA IRP is focused on creating customer value, for each of the customer segments. This is an important paradigm shift from previous IRPs which focused on minimizing total system costs, as a proxy for revenue requirements.
- Priority for customers is their total bills and the uninterrupted availability of power (resilience) along with reliability and power quality. The electricity rate is of secondary importance. (If residential customer bills go down, but their rate goes up, the customers are better off. This could happen due to a combination of energy efficiency, fuel cost savings, and increased grid upgrades to improve reliability, resilience and power quality).
- Finally, the rate PREPA charges depends entirely on the regulatory compact that exists.

Regulatory Compact Implications to Customers and PREPA Fiscal Plan

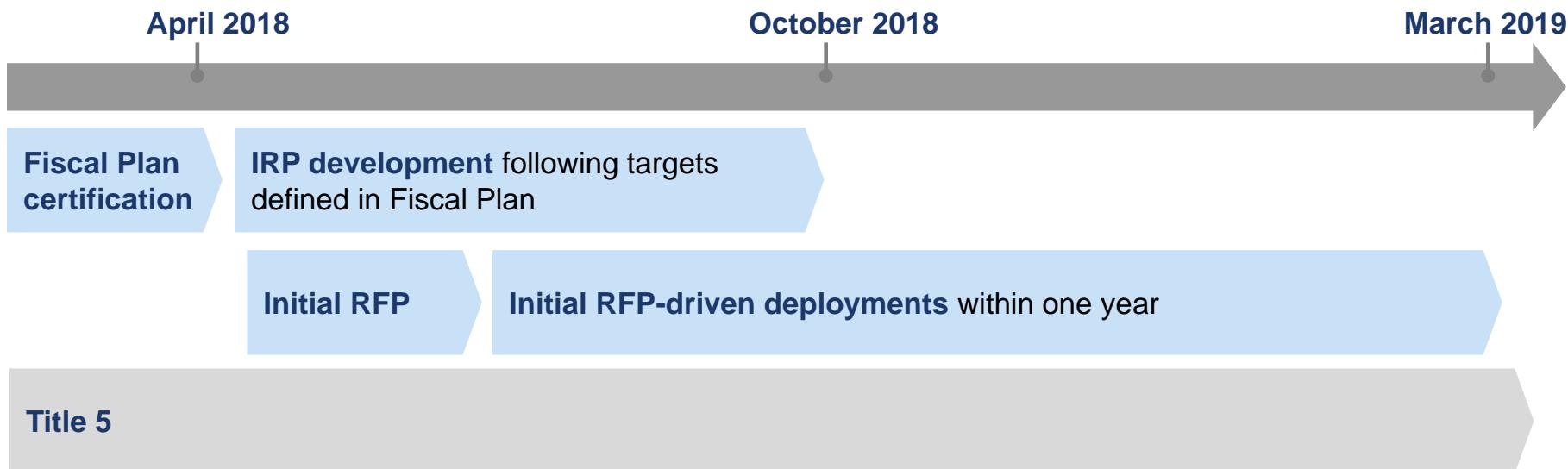
- The current regulatory compact is not viable since PREPA can not recover its operating cost, much less earn a return on capital. Since PREPA does not set the regulatory approach, the fiscal plan will take the selected option from the IRP and show the implications of alternative regulatory approaches to both the customer and PREPA's overall financial viability. Successful mainland regulatory models should be used to redefine what an efficient regulatory compact should be to enhance the environmental, efficiency and safety regulations and to define the optimum energy cost for PREPA's customers. In other words, the current set of regulatory rules and operations must be re-vamped.
- These approaches include, but are not limited to:
 - Full Cost recovery in rates of both operating cost and return on rate base capital;
 - Differentiated rates based on service level (e.g., power quality, reliability and resilience) so that the customers desiring higher service levels pay for those services and there is no cross subsidy;
 - Allowing the utility to invest and/or operate in partnership with the customer on the customer side of the meter;
 - Allowing the customer to provide power and ancillary services to the grid from grid tied microgrids, mini grids, or aggregated distributed resources; and
 - Performance based rate incentives for operational improvements.

Integration with PREPA Fiscal Plan

- **Given the complexities of the IRP process and its range of regulatory approaches, it is not possible, nor credible at this juncture to quantitatively modify the current PREPA Fiscal Plan with the IRP objective function targets.**
- Once the IRP is done, and if any of the regulatory compact issues are clarified by that time, PREPA will be able to determine the fiscal impacts of aligning to the selected IRP preferred option and whether it has the balance sheet strength to do so (whether privatized or not), or whether other partnerships with third party capital will be required.
- **The IRP should test both the generation plans outlined in the macro resource planning and the transformation sections of the Fiscal Plan as scenarios in the IRP model, to ensure that a range of potential technological options and futures are tested.**



Even Before IRP Completion, Small Scale Procurement of Near-Term Generation is In Line with All Generation Scenarios and Carries Resiliency Benefits



Considerations

- Conducting a utility-led RFP for privately funded new low-cost generation will provide a tangible first step towards lowering the cost of power and realizing near-term savings
- Projects should be deployable in the near-term without large-scale grid investment or other infrastructure build-out (e.g. solar + storage, modular LNG systems) and should be consistent with any potential long-term generation solution resulting from the IRP (e.g. relatively small scale of procurement, potentially ~200MW)
- RFP process will be transparent and open to all interested parties
- PREPA can engage with both parties holding shelved contracts and those who have submitted reasonable Title V projects for near-term consideration
- PREPA has taken initial steps towards near-term targets through issuing RFP for electrical power solutions for Vieques and Culebra

PREPA/P3 Authority have issued several RFPs ahead of the IRP that are aligned with the goal of creating a modern grid and new generation mix

- PREPA and the P3 authority have issued two RFPs since April 2018 while two older RFPs are still active
- Outstanding RFPs were issued to move towards the goal of supporting a modern grid and a new generation mix

RFP	Type	Issuer	Issued	Deadline	Latest update
New generation for Culebra & Vieques	Generation	PREPA	April 2018	EOY 2018	<ul style="list-style-type: none"> ▪ 15MW system for 4 years while submarine cable is restored ▪ Brings generation closer to load
Utility scale energy storage	Storage	P3 Authority	RFQ: June 2018	End of Q2 FY19	<ul style="list-style-type: none"> ▪ Explore energy storage to reduce use of expensive peaking units ▪ Specifies storage capacity of 10-40MW and estimated annual \$1.75M savings
Hydroelectric program upgrade	Generation	P3 Authority	TBD	TBD	<ul style="list-style-type: none"> ▪ P3 is currently conducting a desirability and convenience study ▪ Transfer of operations and maintenance of plants to PRASA
Replace PREPA's peaking units	Generation	PREPA & P3 Authority	Pre-2015 ⁴	-	<ul style="list-style-type: none"> ▪ Stalled since Hurricane Maria ▪ Calls for replacing diesel and fuel assets and reducing reserve margins

RFPs have been issued away from PREPA that should be assessed as part of the IRP and PREPA planning processes:

- Two RFPs for development of microgrids, one at the Roosevelt Roads Naval Station¹ and five at PRIDCO industrial sites²
- One RFP proposes a 160-240 MW liquefied propane gas (LPG) private generation facility in San Juan, closer to demand ³

¹ Issued by the Commonwealth of Puerto Rico through the Local Redevelopment Authority for Naval Station Roosevelt Roads

² Issued by the Commonwealth of Puerto Rico through the Puerto Rico Industrial Development Company (PRIDCO)

³ The project was accepted by the P3 Authority and is still under consideration and should be assessed as part of the IRP

⁴ The RFP was issued pre-2015 and is not currently in effect

Investments in Non-Traditional Grid Assets Can Enable Advanced Grid Functionalities to Drive Operational and Financial Benefits

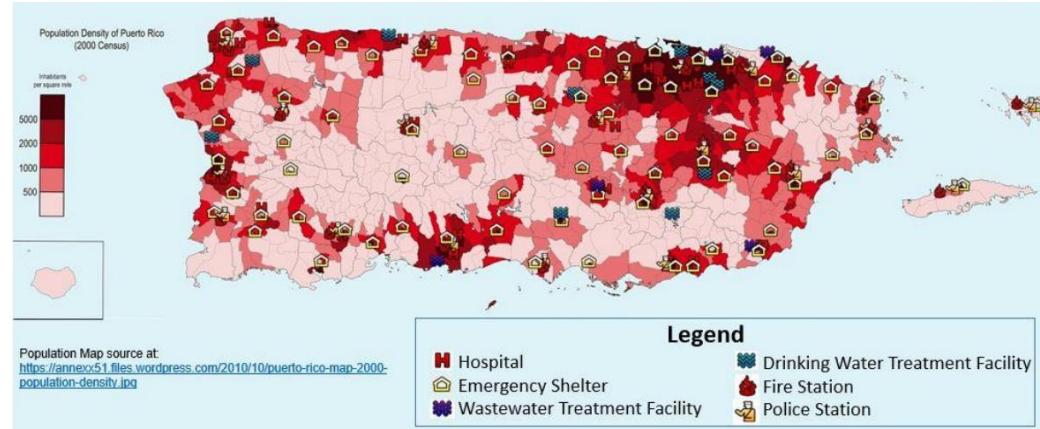
Trends	Description of operational benefits	Description of financial benefits	Potential investments
Non-wire solutions 	<ul style="list-style-type: none"> Increases reliability through reducing dependence on fault-prone assets Potentially decreases costs where non-wires solutions are a cheaper alternative than new power lines 	<ul style="list-style-type: none"> Reduces CapEx by reducing transmission build Reduces OpEx by avoiding maintenance costs associated with hard-to-reach assets 	<ul style="list-style-type: none"> Grid-edge or centralized storage systems to reduce peak loads Micro-grid equipment
Renewables integration 	<ul style="list-style-type: none"> Facilitates renewables deployment by enabling two way power flows, providing storage for intermittent resources, and managing voltage fluctuations 	<ul style="list-style-type: none"> Defers CapEx by offsetting load increases, eliminating the need for line expansion CapEx 	<ul style="list-style-type: none"> Residential roof-top solar Two-way metering to track flows
Advanced monitoring and automation 	<ul style="list-style-type: none"> Reduces impact (i.e., # customers) and duration (i.e., # minutes) of outages by automating feeder switching and fault location and isolation services Improves power quality by automating optimization of line voltage levels and load balancing Reduces impact and duration of outages by providing real-time, actionable data for crew dispatch Prevents outages by enabling predictive maintenance 	<ul style="list-style-type: none"> Reduces OpEx by reducing truck rolls and associated labor expenses Reduces OpEx by maintaining the minimum voltage level required, reducing load and purchased power Defers CapEx by offsetting load, mitigating need for line expansion CapEx Defers CapEx by enabling operators to maximize useful lives of aging assets (e.g. only replace equipment when required) 	<ul style="list-style-type: none"> Automated metering to reduce billing costs Automated distribution fault detection to rapidly address downtime Voltage-Var optimization to increase efficiency of system Automated protection and control equipment in substations
Weather hardening 	<ul style="list-style-type: none"> Prevents outages due to extreme weather 	<ul style="list-style-type: none"> Reduces cost associated with rebuilding and power loss following weather events 	<ul style="list-style-type: none"> Elevating equipment, fortifying poles Micro-grid deployment

Microgrids Can Play a Role in Increasing System Resiliency

Microgrid overview

- Plan includes estimates for renewables and storage, assumed to be built closer to load, forming the basis for microgrid potential
 - IRP and on-the-ground analysis required to appropriately size and site microgrids
- Microgrids do not imply independent operation all the time; these are largely components of a centralized grid infrastructure¹
- Microgrids provide localized generation, providing a variety of system benefits:
 - Reduce daily strain on transmission
 - Reduce “domino effect” witnessed during system through islanding capabilities
 - Enable limited generation during grid outages through independent operation

Illustrative view on hypothetical islanding considerations based on population and location of critical infrastructure



- Key locations for microgrids include hospitals, police and fire stations, shelters, remote communities, water treatment facilities, ports, and other infrastructure deemed critical
- Can be sized to support the direct facility and/or supply surrounding area
- Local generation (e.g., nearby assets, industrial-sited assets) can also provide basis for microgrids with necessary components (e.g., controls, lines)

¹ In some remote areas, fully disconnected grids may be feasible, but will require increased investment and government support

The success of processes meant to secure Federal funding will be critical role in achieving PREPA's goals and unlocking support from other sectors

- Federal funding will be crucial in not only supporting the transformation required for PREPA to achieve the goals outlined within the Fiscal Plan, but also in unlocking inflow of private capital to the island, as such:
 - Infrastructure spend on **grid modernization and storage integration** will be essential in establishing a safe, reliable, resilient and cost-effective power system with standardized, modern equipment
 - **Trade financing and credit support** - for example the utilization of CDBG funds as a credit backstop to support fuel procurement negotiations, enable hedging programs, and reduce PREPA's credit risk - can support PREPA's pursuit of operational efficiency
 - Federal technical assistance¹ and input to the Blue Ribbon Task Force to aid in developing and shaping the **regulatory framework** can create confidence in the regulatory environment for the long-term
- Post-emergency federal funding should be consistent with the PREPA Fiscal Plan and PREPA identified budget needs
- Post-emergency Federal support should be clearly **prioritized and sequenced** to maximize its efficiency and impact, address the most urgent and most dependent projects first, and accelerate the transformation of Puerto Rico's power sector, and to support fiscal sustainability at PREPA

Recovery Plan

FEMA has contracted RAND to write a holistic **Recovery Plan for Puerto Rico to serve as a framework and roadmap for the enabling requirements and investment needed to recover** from the Hurricanes and set PR on a path for a financially sustainable future

Governor's request to Congress

A primary purpose for the Plan will be to **serve as an input for the Governor's request to the United States Congress for Federal funding and support** to achieve the goals outlined in this Fiscal Plan and supported by the Recovery Plan

Final determination of funding / support

The **Recovery Plan and supporting analyses will play a critical role in making a proactive case for Federal funding** to enabling the transformation of the power sector outlined in the Fiscal Plan and unlock crucial funding from the private sector

¹ Could include grant funding to the DOE Labs / others for White Papers submissions

A Grid Modernization Plan Can Supplement the Results of the IRP to Help PREPA Invest Cost-Effectively in the Power System to Enhance Reliability and Resiliency

PREPA's Grid Modernization Plan is to be completed by Q2 FY19 and should provide an overview of the major investment categories and projects PREPA is considering to deliver reliable, resilient power

- The Grid Modernization Plan should outline plans for:

Transmission & distribution line maintenance investment 	Non-wires investments (e.g. storage, microgrids) 	Monitoring & automation investments (e.g. automated metering, automated fault detection) 
Redundancy investments 	Renewables integration investments (e.g. two-way metering) 	Weather hardening investments (e.g. burying wires, fortifying poles) 

- Each potential investment in the plan should be described by overall investment need, time horizon, financial savings expected (including savings from deferred/eliminated need for generating capacity expansion) and reliability improvements expected, as quantitatively as possible. Where relevant, qualitative benefits and tradeoffs should also be described.
- This plan is to be revised and reported annually
- The first iteration of this plan, due by Q2 FY19, should not presuppose any outcome of the IRP but rather present investments that would positively contribute to increased reliability and resiliency across a spectrum of generation designs
- Future versions of this plan should be grounded in the results of the certified IRP



VII. Liquidity Management

Cash Management Controls & Liquidity Improvement

PREPA has implemented several specific initiatives that have produced meaningful improvements to its current liquidity situation and positioned PREPA to continue to drive further progress. Current PREPA expectation is that the Company will return to cash flow neutrality (customer collections equal / exceed operating cash outflows) in the 1st quarter of FY 2019

Fiscal Governance

- Hiring of a Chief Executive Officer
- Appointment of the Chief Financial Advisor ("CFA") reporting directly to the CEO
- Creation of the Office for Contract and Procurement Compliance ("OCPC")

Accountability

- Applying more rigor into the evaluation of potential projects and cash expenditures
- More robust weekly reporting requirements
- Enhancing the planning models and tools used to evaluate PREPA activities

Cash Management Controls

- Monitoring of liquidity, cash receipts and disbursements; weekly forecast to actual variance analysis
- Cash distribution controls; CFA approval required for all disbursements greater than \$2 million and for the classification of all Eligible Uses pursuant to the Government loan
- Efforts to maximize federal funding available for disaster recovery

Increasing Collections

- Reestablishment of communications linkages from customer meters to PREPA billing systems
- On-going discussions with public corporations to validate / determine potential collections of past due amounts
- Agreement reached with PRASA on the collection of current and undisputed past amounts
- Testing market appetite for potential prepayment plans with industrial clients

Managing Fuel & Purchased Power

- Managing generation fleet resources with a view to optimizing economics when the transmission grid allows
- Operating the power grid with a lower level of spinning reserves, improving dispatch
- Negotiations with multiple vendors over potential future savings

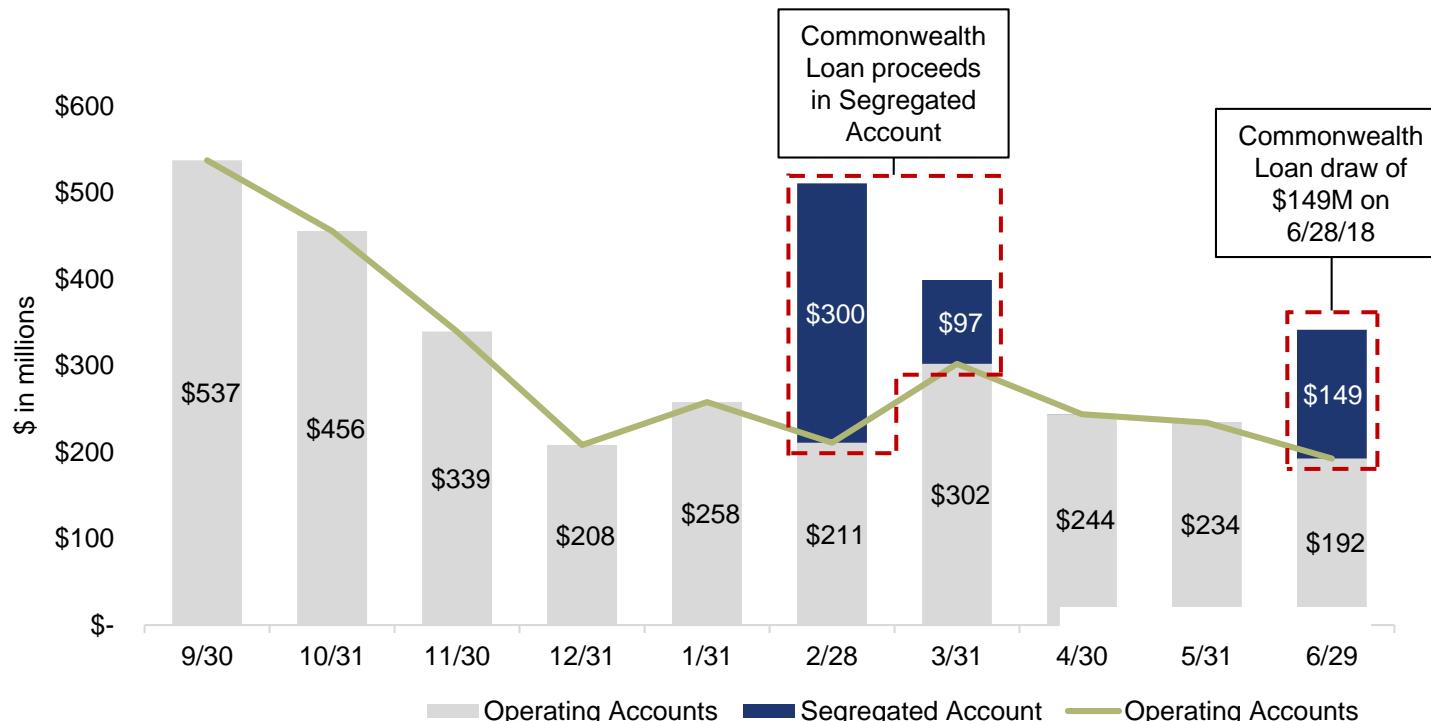
Other Initiatives

- Managing the FEMA reimbursement process; delay in payment to largest restoration vendors until PREPA collects the reimbursement funds from FEMA
- Establishing the actual validated claims for storm related insurance matters, and eventual collection of these funds
- On-going effort to evaluate options and execution tactics related to material changes in staffing levels and capabilities

PREPA Bank Balances – Operating and Segregated Accounts

PREPA's cash flow has stabilized in 2Q 2018 as cash receipts have generally met operating cash expenditures

- After the significant decline in the cash balances of PREPA's Operating accounts through January 31, 2018, PREPA received a \$300M emergency loan from the Puerto Rico Treasury Department ("Commonwealth Loan") to provide short-term liquidity relief and enable it to continue operations
 - Pursuant to the terms of the Commonwealth Loan, PREPA's Operating accounts cannot be greater than \$300 million
 - Any Operating funds in excess of \$300 million result in loan repayments on the Commonwealth Loan
 - As of June 30, 2018, the Commonwealth Loan converted from a revolving facility to a term facility
 - As of July 20, 2018, the Commonwealth Loan balance was \$174 million
- PREPA's combined Operating and Segregated account bank balance at 6/29/18 was approximately \$341M



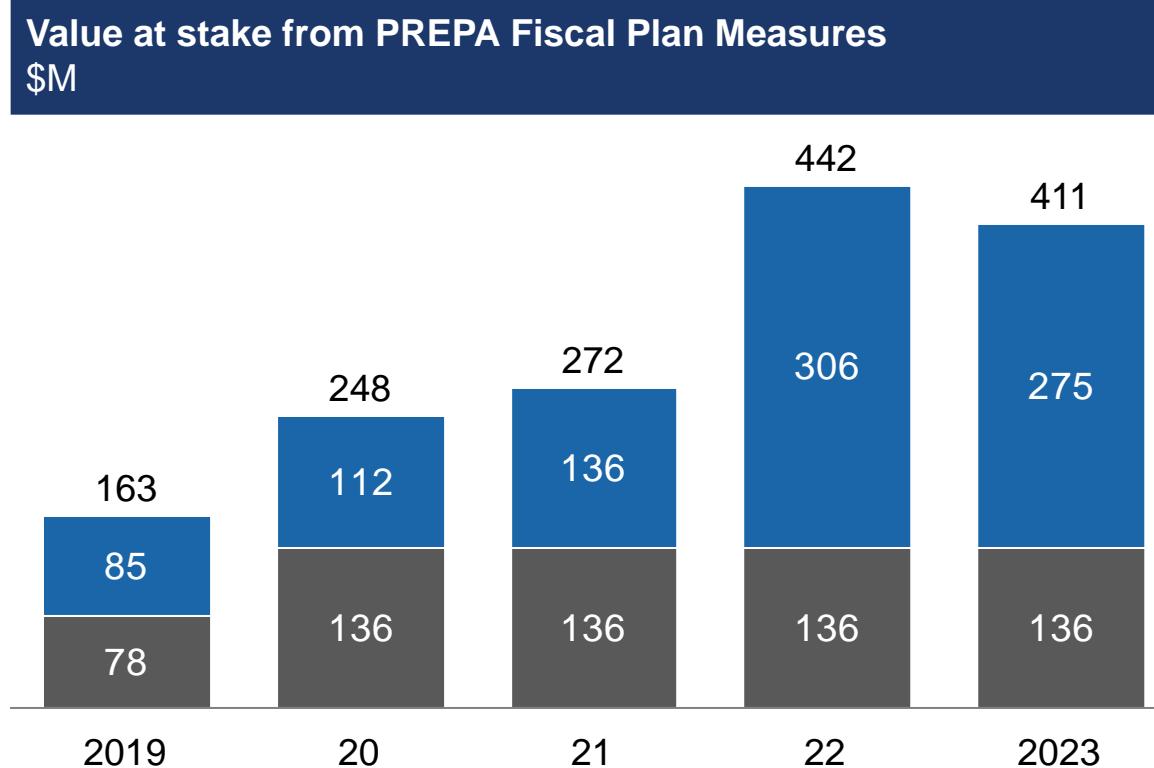
Notes:

- Operating Accounts include General Fund, Working Fund and Revenue Fund accounts
- Operating Accounts exclude PREPA deposits held at GDB and funds held in FEMA emergency accounts
- 6/29 bank balances are not final and are based on bank account online read on that date

VIII. Operational Initiatives and Performance Improvements

Overview of measure impact

■ Revenue ■ F&PP ■ Labor Opex ■ Non-Labor/Other Opex ■ Maintenance Expense



Sizing of Revenue, Non-Labor/Other Opex and Maintenance Expense measure values to be completed by Q2FY19 and reported to FOMB as part of ongoing implementation reporting

Revenue measures – Overview

① Revenue

Measure	Description	Value at stake, \$ million	
		FY2019	FY2019-2023
CILT excess consumption collection	Collecting from municipalities consuming in excess of cap; collecting from non-paying entities and municipalities	TBD	TBD
Current accounts receivable collection	Collecting on current accounts receivable in a timely fashion such that no aging occurs	TBD	TBD
Aged accounts receivable reduction and collection	Obtaining one-time payment on aged accounts receivable a year old or less; reducing aged accounts receivable accrual by disconnecting non-paying accounts and correcting mis-budgeting where relevant	TBD	TBD
Non-technical loss reduction	Sizing, monitoring, and reducing the amount of non-technical losses, including theft, in the PREPA power system	TBD	TBD

Sizing of measure values to be completed by Aug 31, 2018 and reported to FOMB as part of ongoing implementation reporting



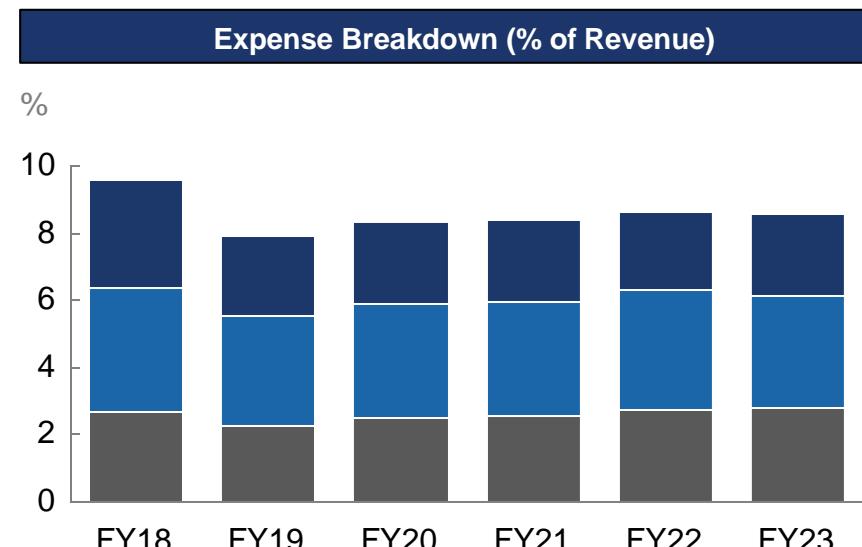
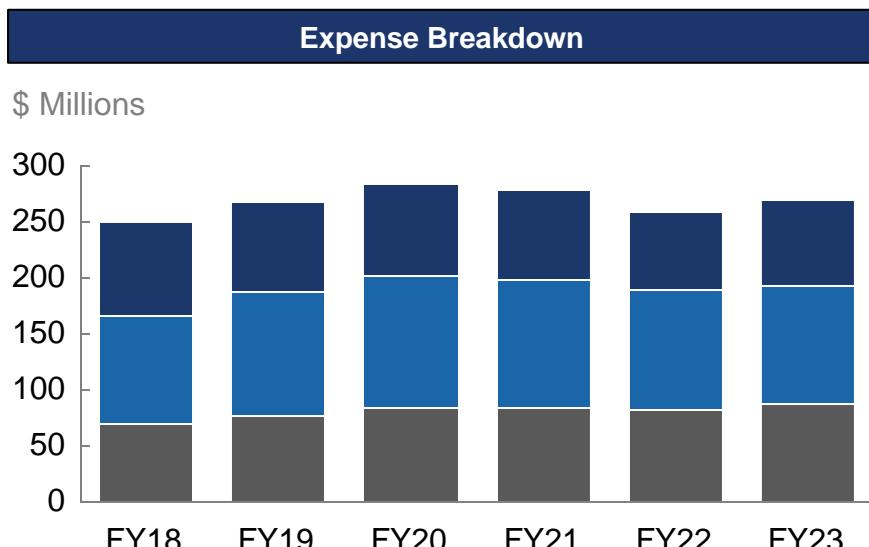
CILT

Public Lighting

Special Customer Subsidies

Background – Contribution In Lieu of Taxes (CILT)

- Currently, CILT and public lighting are recovered through an inexact and inefficient rate adjustment mechanism that changes based on Fuel and Purchased Power Expenses. This approach suffers from the following shortcomings:
 - Unless Fuel and Purchased Power expenses are sufficiently high, the compensation provided to PREPA is less than the cost of the CILT and public lighting, creating a cumulative cash deficit
 - An imprecise relationship existed between the revenue and expense streams
 - The costs of these programs were opaque and customers were not aware they were funding these programs
- As part of the PREPA Revitalization Act (Act 4-2016), the Legislature approved the full recovery of CILT, public lighting and subsidies
- The municipalities' for-profit facilities are excluded from the CILT, so municipalities must pay for this consumption.
- Estimated cost of for-profit municipal facility consumption that was previously included in CILT is \$21m per year
- Municipal CILT and Public Lighting are projected to be within the industry average range of 2 – 6% of revenues. Subsidies for special customers (e.g., low income, hotels) are required by law.



SOURCE: PREPA Planning Dept.

Significant Reforms Have Removed Inefficiencies From CILT Program

The Government of Puerto Rico has made significant changes in the treatment of the Contribution in Lieu of Taxes (CILT) by enacting Act 57-2014 and Act 4-2016

- Moving of all the municipal public lighting to the subsidies rider in the customer bill
- Removal of all municipal for-profit entities from receiving an electric service credit from the CILT
- Establishing a total consumption (kWh) cap on the municipal CILT, which will also be reduced by 15% (in three fiscal years, 5% each)
- Providing that the municipality will pay for any excess, plus the for-profit ventures
- Establishing a mechanism that promotes energy efficiency and additional savings above the mandated total consumption cap imposed on Municipalities by Act-57-2014 (i.e. 5% yearly reduction in the maximum consumption amount for a total 15% reduction over three years). Municipalities would receive a payment from PREPA for the value of the difference between the mandatory total consumption cap and actual consumption, which would only be payable if all municipalities, in the aggregate, comply with their respective consumption caps

 Under the new rate structure, which will be implemented at the beginning of FY2019 (delayed until Jan 2019), PREPA will recover the cost of CILT via the CILT and subsidies rider on customer bills. Customers will have greater transparency and there will be greater accountability. Any additional reductions or amendments would require legislation

Payments from municipalities on their consumption in excess of their consumption caps, as well as collection of outstanding receivables for consumption in excess of municipal caps, is a potential source of additional revenues for PREPA

See Appendix for comparable programs and supporting data

F&PP measures— Overview

② F&PP

Measure	Description	Value at stake, \$ million	
		FY2019	FY2019-2023
Economic Dispatch	Optimizing conventional plant dispatch to reduce fuel burn and deliver savings	44.3	220
Increased LNG Utilization	Repowering oil-fired plants at Costa Sur and San Juan to run on 100% LNG	40.5	224.5
Purchased Power – Renewable - Price Improvement	Renegotiating renewable purchased power contracts for cost savings	0	161.7
Purchased Power – Conventional - Price Improvement	Renegotiating conventional purchased power contracts (PPOAs) for cost savings	0	220
Fuel Procurement Contracts - Price Improvement	Renegotiating fuel supply contracts through best-practice procurement strategy to deliver savings	TBD	TBD
Commercial Loss Reduction ¹	Reducing generation need by reducing technical and non-technical losses by 1%	0	87.2

Sizing of Fuel Procurement measure value to be completed by Q2FY19 and reported to FOMB as part of Fuel Procurement Strategy reporting

¹ Estimates include technical and non-technical loss reduction. These effects are to be disaggregated in future implementation reporting.

Updated Generation Baseline Considers Both Improving Grid Reliability and Achieving Lower Cost Power as a Goal

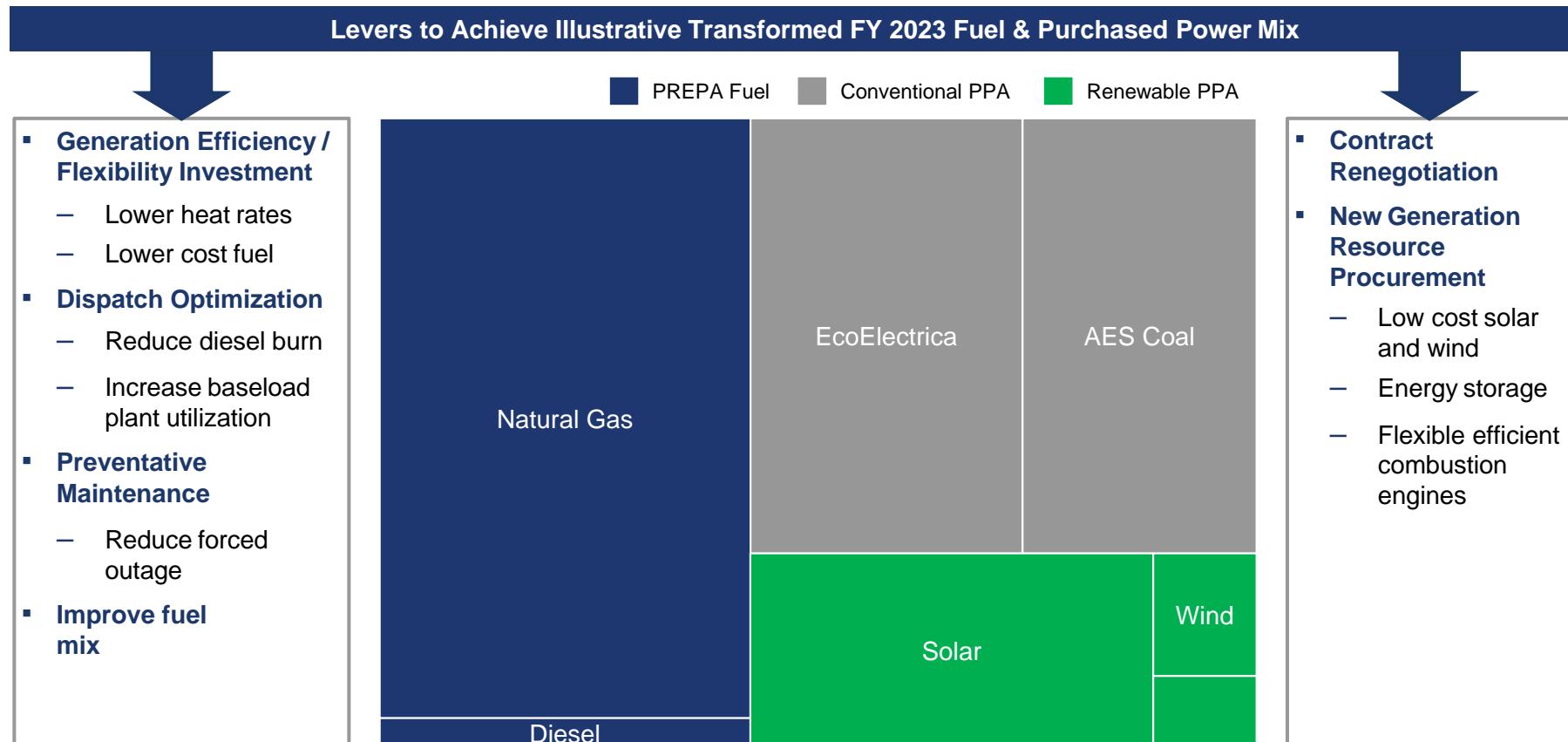
PREPA is in the process of developing realistic scenarios and forecasts for Post-Transformation and for analysis in the 2018 IRP process, and has developed initial views on cost potential

Power generation capacity projections that include significant low cost renewable power generation must include necessary upgrades to generation and T&D to meet acceptable reliability criteria

FY 2023	Goals/Target ¹	Comment / Constraint
Resource Expansion Focus	Reliability & Resiliency	PREPA IRP principles seek to achieve lowest rate in compliance with reliability and environmental criteria
Fuel & Purchased Power Cost Reduction	20-25%	Driven by aggressive declines in capital cost projections
Renewable Generation	20-25%	Major upgrades to generation + T&D system required to support 25%; increasing reliability issues at >25%
Clean Low Cost Fuel Supply	20-30 TBtu / Yr	New and existing options to be analyzed and compared
Reciprocating Engines	500 MW	Flexible fast response generation for system stability
Battery Storage	100–600 MWh	For voltage support / frequency regulation and load shifting
Generating Unit Retirements	TBD	Reliability and black start issues must be considered
Investment (Generation, Fuel Supply)	\$3.3 Billion	Significant dependency on federal funding for T&D and private investment in overall system

¹ These aspirational targets can be potentially achieved, but only after securing substantial resources for T&D and Generation improvements before and after FY23 Preliminary scenario still under development, and will be thoroughly analyzed through the IRP process running between March and September 2018

Levers to Decrease Fuel and Purchased Power, PREPA's Largest Cost Component



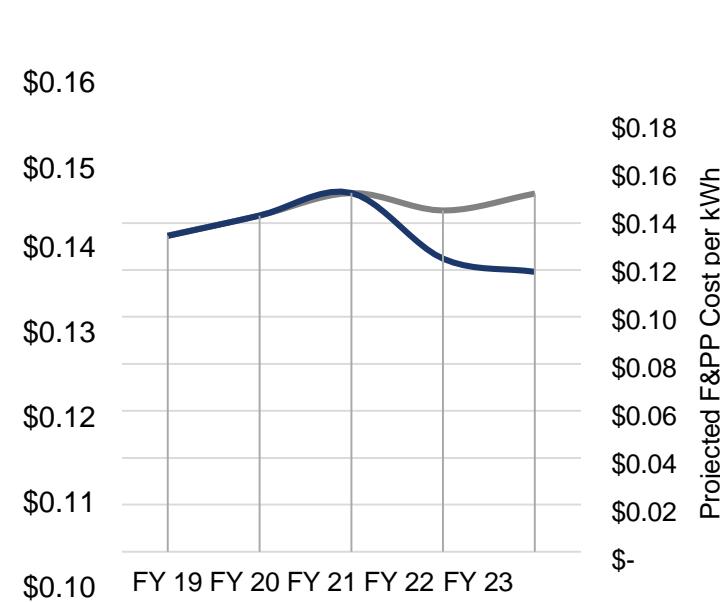
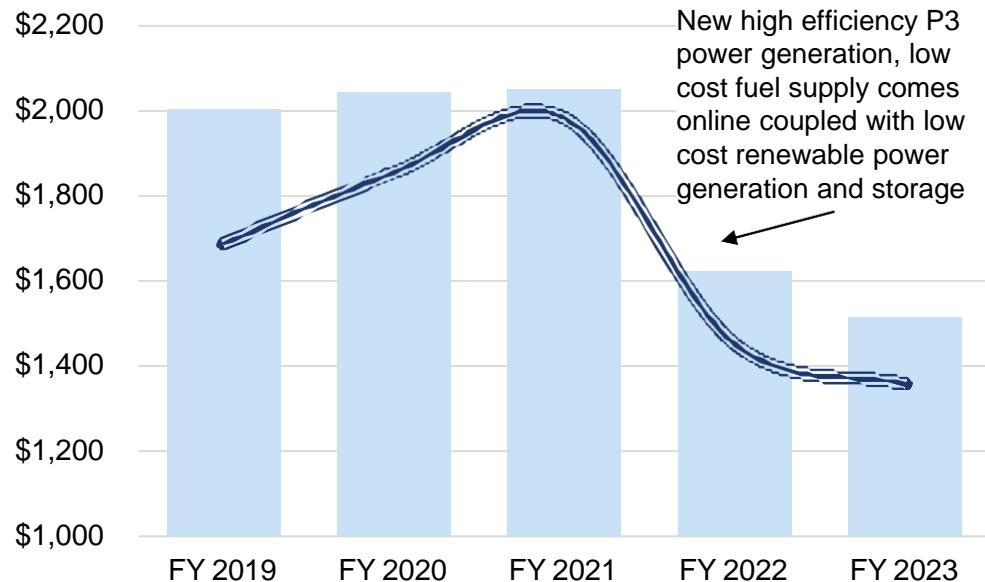
- Reducing exposure to historically high and volatile fuel prices requires significant capital investment in high efficiency and stable / predictable cost generation assets
- Opportunities exist to improve costs today through operational initiatives and Title III, but the greatest opportunity lies in longer term (beyond 2023) reconfiguration of Puerto Rico generation assets through Transformation Plan

The Updated Baseline Scenario Improves on the Status Quo

The updated baseline generation capital spending plan envisions achievement of 20-25% lower fuel and purchased power costs through efficient, flexible generation and diverse, energy fuel sources

- Preliminarily, a 20-25% reduction (\$400 - 500 million) in fuel and purchased power cost from the \$2 billion per year currently spent under normal operating conditions (pre-storm or post restoration) is an aggressive but potentially realistic target for FY2023 (~12 cents)
- Reductions in these costs beyond 25%, up to 50% may be possible within a 10-year time horizon, with adequate Generation and T&D investments¹
- Increasing renewable generation beyond targeted levels of total generation may also be possible within a 10 year time horizon, again, with sufficient upgrades to the overall system that require substantial near term capital investment

Transformed Baseline Fuel & Purchased Power, USD M



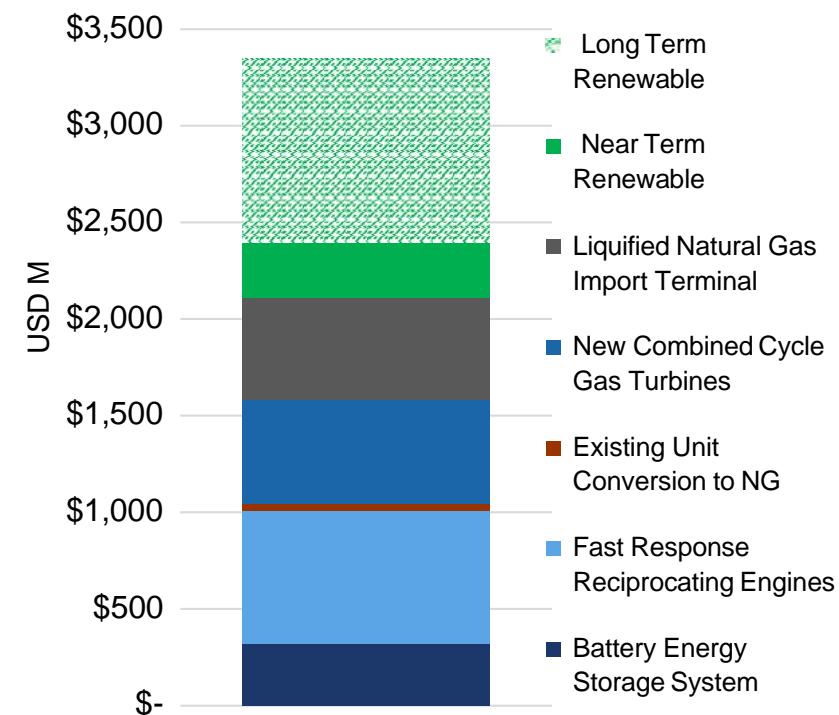
¹ Necessary investment and external funding availability will determine achievability of long- term goals

Updated Baseline: Capital Needs

PREPA is analyzing technologies and concepts to achieve the lowest cost rate that meets minimum reliability and environmental compliance criteria

- Technologies currently under review and analysis include:
 - Reciprocating engines – fast-response, moderate efficiency, multiple fuel input capability > reliability / flexibility
 - Solar PV – low cost, no variable fuel component, can reduce fuel burn if planned properly > cost / environmental
 - Wind, & Other Renewables – low cost, no or low variable fuel component > cost / environmental
 - Battery Storage – reliability in case of power plant outages, load shifting for low cost generation > reliability
 - Combined Cycle Gas Turbines (CCGT) – high efficiency > baseload / cost

- System design improvement concepts being studied now and in the IRP, including, but not limited to:
 - Reducing the size of PREPA's largest unit to reduce the requirement for spinning reserves and decrease heat rates across the generation fleet
 - Adding flexible generation and battery storage to limit the need for spinning reserves at low efficiency plants
 - Conversion of Northern plants to natural gas and pursuing a low / alternative fuel supply strategy
 - Southern plant repowering and gas supply expansion at Costa Sur, Aguirre Offshore Gas Port (AOGP), and other natural gas supply opportunities
 - Solar plus storage peaking unit additions and substitution for existing fossil generation
 - Demand response and distributed generation dispatch control resource development and procurement

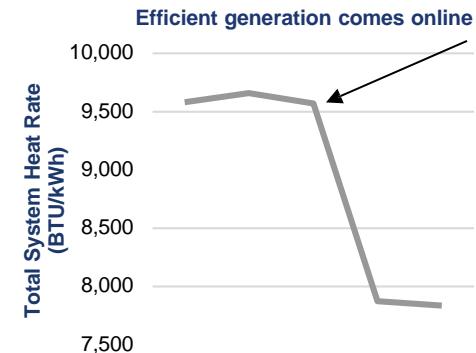


Updated Baseline: Generation Capital Sequencing

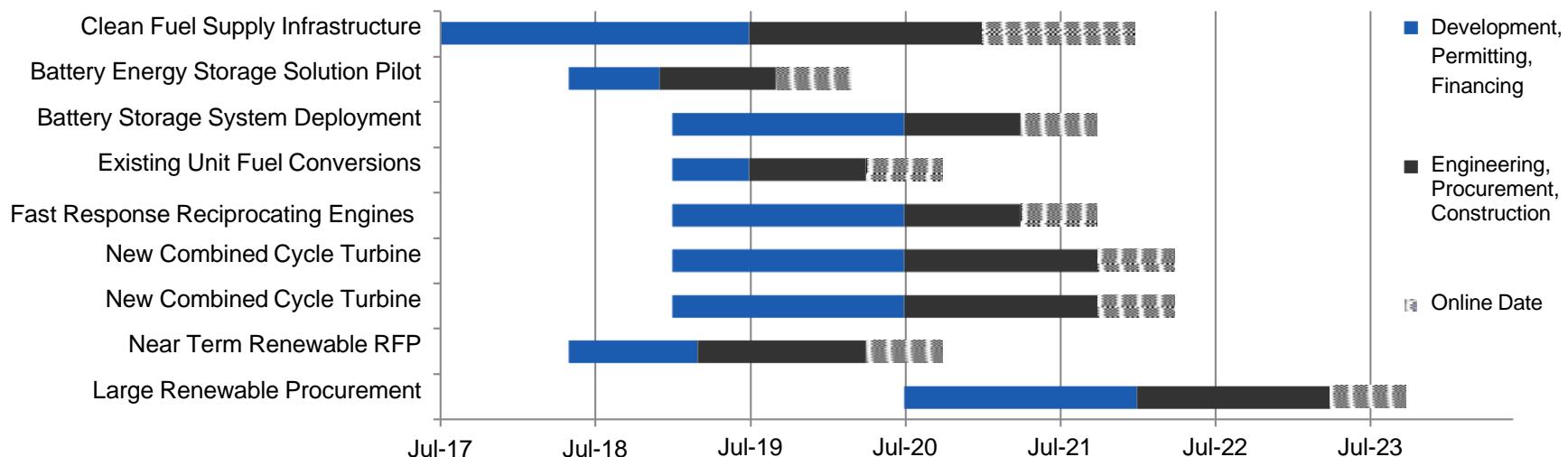
PREPA is preparing to reassess its capital spending plan to ensure MATS compliance and reliable, efficient generation.

Long term power system goals include¹:

- Retirement of old and inefficient units, and repowering and replacement of generation assets through privatization to reduce fuel expense, system heat rate, and exposure to volatile fuel prices, and to improve system flexibility to integrate renewable resources
- Construction of Clean Fuel Supply Infrastructure such as the Aguirre Offshore Gas Port ("AOGP") and other options for MATS compliance and generation system efficiency
- T&D system hardening to ensure that the electric grid is reliable and resilient against future atmospheric events, and capable of handling variable customer load and generation from renewables and distributed resources



Illustrative Capacity Expansion Plan – TO BE REVISED POST IRP



¹ All of the above is subject to the new IRP process. The findings from the IRP will serve as a baseline to analyze bids for Energy Sector Modernization through privatization or concession structures

Cost Reductions – Fuel Procurement

A comprehensive fuel procurement strategy should be developed by the end of Q1 FY2019 to deliver further savings for PREPA starting in FY19

- PREPA consumes approx. 8 MMBOE of Fuel Oil #6, 3 MMBOE of Fuel Oil #2, and 7 MMBOE of LNG annually¹, which are **procured under defined contracts**
- **Under Title III status** a systematic review of contracts to reduce costs, increase service level, and overall assess savings opportunities will be conducted
- Procurement of all fuel types should be guided by a **comprehensive fuel procurement strategy**, which should include:
 - **Measures to further develop procurement capabilities and performance incentive structures** to improve the process and outcomes of fuel procurement, including incentives tied to specific cost reduction targets for each fuel type
 - **Development of procurement processes** with specific savings targets measured against clear baselines, actionable steps set against reasonable deadlines, and the entire process showing measurable impact within the contracting cycle that it is implemented no later than the end of FY19
 - **Assessment of payment terms** to determine whether long payment terms with working capital loans or fuel purchase in mix of spot and term contracts with prompt payment is more cost-effective
 - **Assessment of delivery terms** to determine whether arranging own shipping (FOB) or relying on the shipper for transportation and insurance with payment on delivery (CIF) is more cost-effective
 - **Administrative and structural reforms of Fuel Procurement Office** to promote market competition, increase transparency, implement quality control, and ensure that the irregularities identified in official government reports and audits are not repeated
 - **Clear governance structure providing oversight independent of PREPA management** to ensure a fair and unbiased RFP process without introducing significant delay
 - **Proactive analysis and solicitation of new potential suppliers** to ensure truly competitive RFP processes with multiple bidders for each fuel type with predetermined bidding templates
 - **Commodity risk management processes and strategies** to reduce exposure to volatile and expensive fuels, such as deploying credit enhancement tools (e.g. through Federal and/or Commonwealth credit backing) to lower credit risk and enable fuel hedging programs, developing an organization that assesses all commodity risks for PREPA centrally and changing the generation mix toward more renewables
 - **Regular performance review processes** to assess contractor's performance against contract service terms

¹ Estimates exclude purchased power fuel consumption which is covered by the PPOAs for those contracts

Cost Reductions – Renewable PPOAs

PREPA has identified potential areas of opportunity for revised contract price assumptions

- Future renewable PPOA contract price assumptions are preliminarily assessed as above potential competitive procurement prices
- Achieving the potential cost reductions could be negotiated or assisted by Title III process, and are included for illustrative purpose

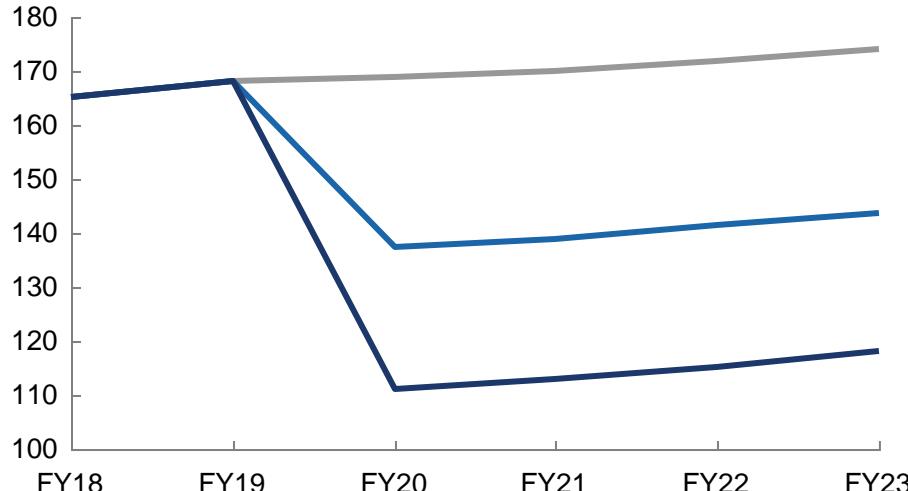
Renewable PPOA Pricing

(non-operating)

- Baseline 2015 IRP Pricing
- Expected pricing
- High Pricing Improvement for Non-Operating

Blended Contract Price

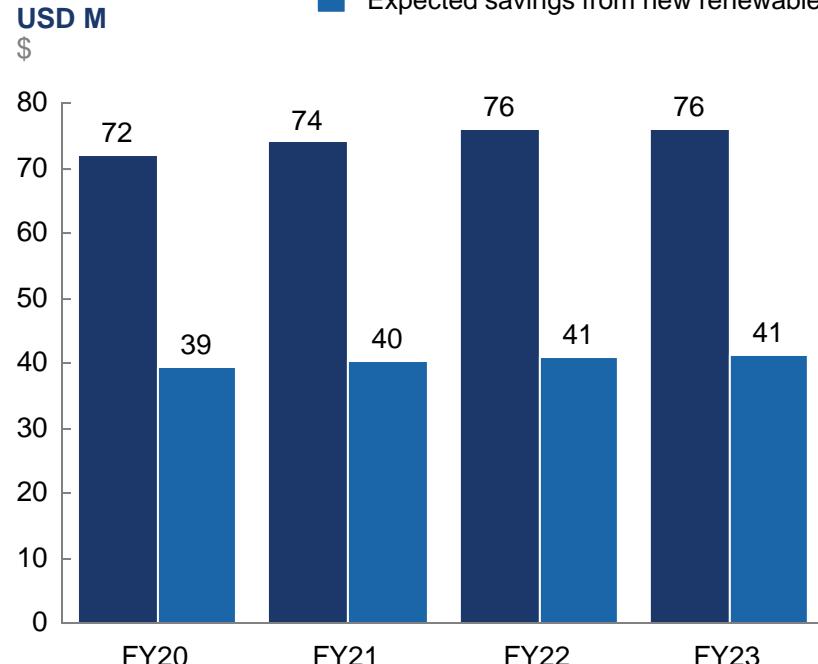
\$/MWh



Renewable PPOA Price Improvement

(non-operating)

- High savings from new renewables
- Expected savings from new renewables



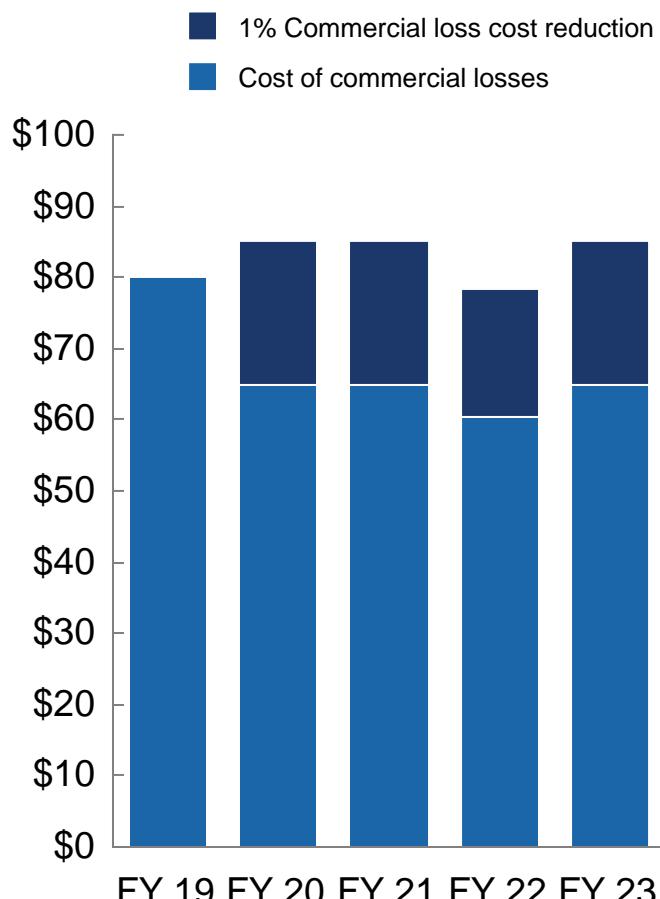
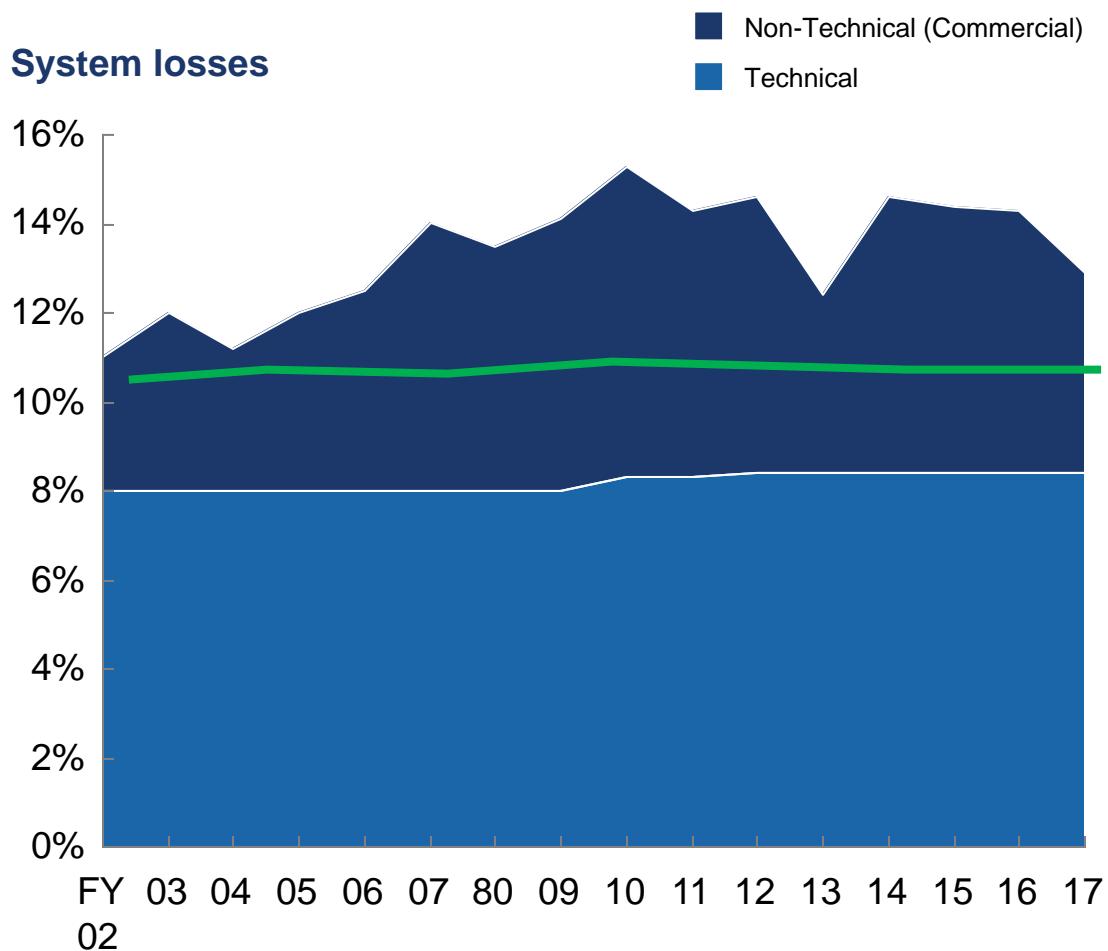
Note: Price improvement potential is based on PREPA analysis of comparable contracts and modelling of current market capacity and PPOA pricing; assumes that all projects in pipeline are built

SOURCE: PREPA Planning, Bloomberg New Energy Finance, Restructuring Advisor Analysis

Cost Reductions – Non-Technical Losses

PREPA can reduce costs by continuing to improve its theft reduction program. Reducing commercial losses to approximately 3% will further reduce fuel and purchased power costs.

System losses

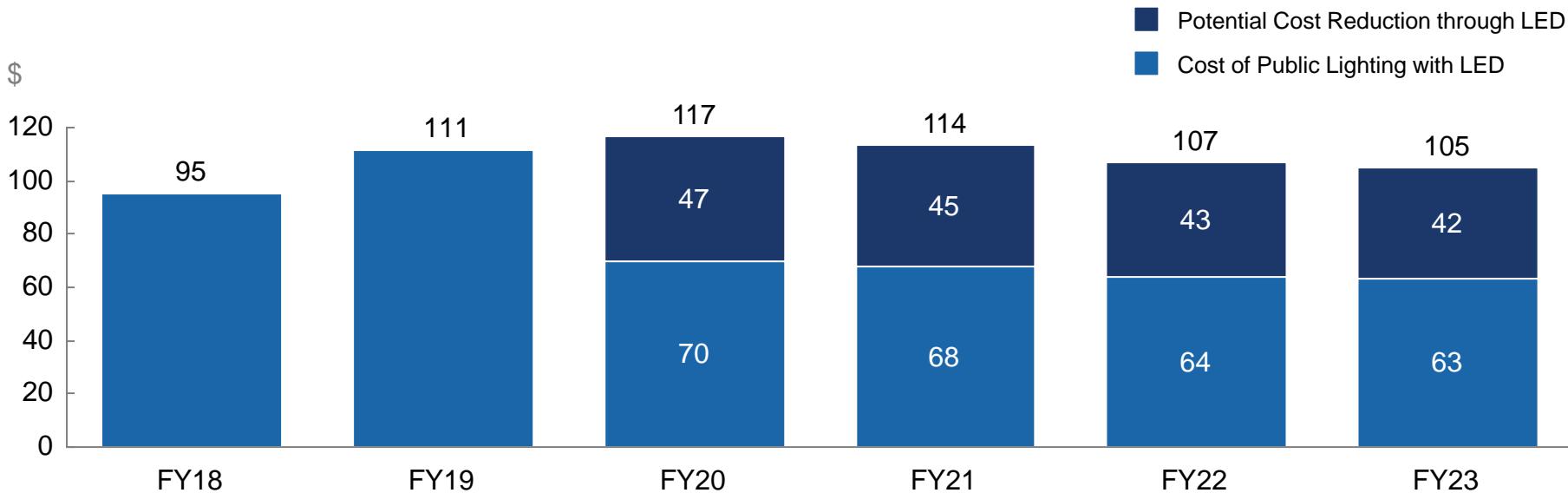


Cost Reductions – Public Lighting Outsourcing/P3

Benefits of converting public light fixtures with LED bulbs

- Switching to LED street technology can save between 50% and 80% in energy costs, in addition to reduced maintenance costs due to longer bulb lifespan (average 20-year expected)
- A portion of the total cost savings is allocated for return on upfront investment made through a public private partnership
- Societal benefits: A study conducted by US Department of Transportation found that the improved lighting conditions provided by LED technology can decrease traffic accidents by 3.1%
- Approximately 10% of light emitted by current public lighting fixtures causes glare and only 40% of the light produced illuminates its intended target
- **Savings not assumed in steady state financial projections**

Potential cost savings assumed from energy efficient LED investment in public lighting (40%), USD M



SOURCE: Cost-Benefit Study for the Proposal to Modernize Street Lighting in Puerto Rico by Estudios Tecnicos Inc. as of January 15, 2015.

Labor operating expense measures— Overview

2 Labor operating expense

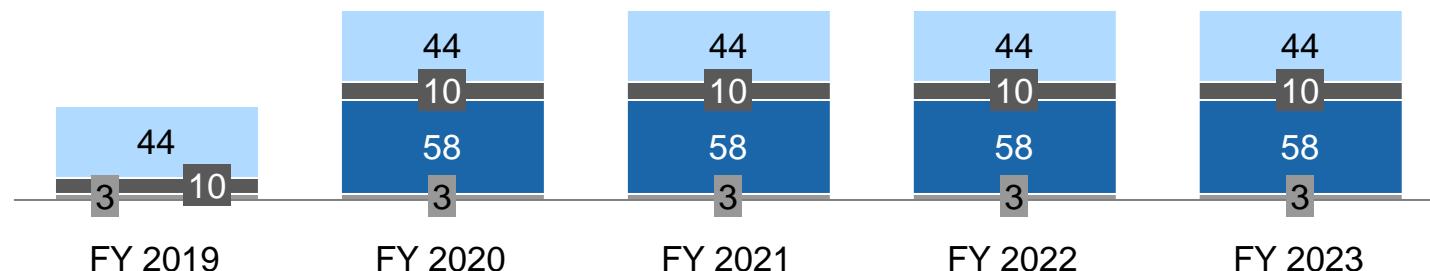
Measure	Description	Value at stake, \$ million	
		FY2019	FY2019-2023
Medical Benefit Reform	Putting medical benefit plan out to RFP in order to lower premiums	44.4	221.8
Pension Benefits Reform	Moving to a defined contribution system and reducing benefits by 10%	0	232
Overtime Benefit Reform	Optimizing use of overtime hours in order to deliver savings in line with expected reduction from overtime rates	10	50
Headcount Reduction (Retirements)	Enabling employees eligible and desiring to retire to do so in a timely manner	21.2	106.2
Christmas Bonus Removal	Removing the Christmas bonus in line with government requirements of all government entities and public corporations	3.4	17
Rightsizing	Determine optimal staffing and salary levels and implement	TBD	TBD

Sizing of Rightsizing measure value to be completed by Q2 FY19 and reported to FOMB as part of Labor Capacity Assessment reporting; benefits and overtime measures value may also be impacted by results of Labor Capacity Assessment

Cost Reduction - Employee Benefits Reform

As a result of Commonwealth Government austerity measures, including Act 26-2017, PREPA has the following opportunities to reduce its employee costs¹:

- Overtime – labor overtime rates have been reduced from 2x to 1.5x (for target of 25% cost reduction from \$40 to \$30 million per year). As necessary, budget reapportionment will be sought to deal with emergency requirements.
- Health – PREPA currently self-funds all medical expenses, and spends approximately \$53.3m per year (~\$8,900 per employee per year), significantly above the contribution levels at other government agencies¹. Act 26-2017 sets forth guidelines to align government agency health plan contributions. The government policy indicates uniform coverage of \$125 per employee per month. These cost reductions for PREPA are included in the Fiscal Plan, as per the Commonwealth's policy.
- Pension reform² – PREPA currently estimates savings from pension benefits reform, including both from switching to a defined contribution system and reducing benefits by roughly 10%
- Christmas Bonus Reform - In line with Commonwealth Government policy, Christmas bonuses will be eliminated starting in FY19



¹ Based on discussion with AAFAF. PREPA continues to analyze the impact of Act 26-2017, including a potential mandate to further reduce medical benefits, as may be required by the Fiscal Plan Compliance Committee that was created under the same statute

² Pension savings from switching to a defined contribution system are approximated at \$30M per year. Pension savings from a benefits reduction are estimated at \$28M per year, using the assumption that the unfunded liability would require a \$147M per year payment without a benefits reduction. Like other debt, the payment of the unfunded liability is not included in the financial projections. Additionally, there is considerable uncertainty around the size of the unfunded liability and payment. Conflicting and incomplete information from PREPA RS has yielded estimates from \$60-\$147M per year

Cost Reduction - Labor Capacity Assessment

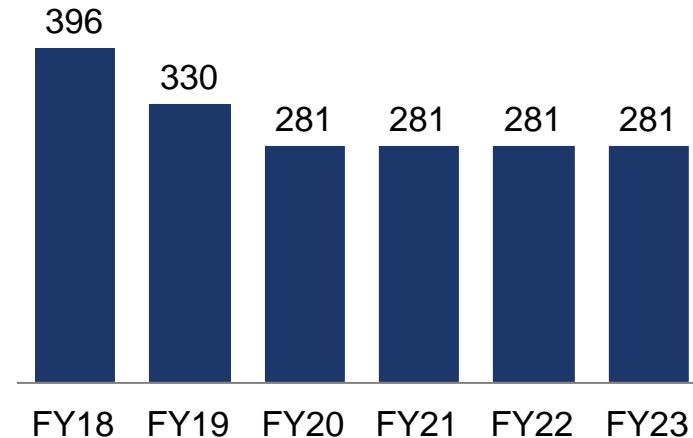
A comprehensive labor capacity assessment could result in adjustments to these figures and should be conducted during FY19 with findings from the diagnostic phase, to be concluded by end of Q1 FY19, to be integrated into FY19 budget during quarterly review and revisions

- **A comprehensive labor assessment should include:**

- An assessment of which functions are critical to on-going and future operations of PREPA and how these functions should be staffed and salaried compared to current staffing and salary levels
- A resourcing plan that controls and reduces the amount of overtime labor cost and pension & benefit costs
 - Sets targets for workforce productivity
 - Outlines next steps for optimizing crew scheduling and work planning
 - Develops strategy to normalize benefits relative to other Government entities & mainland utility benchmarks
- An outsourcing strategy that develops core technical expertise within PREPA and efficiently works with contractors to perform specialized tasks as necessary
- A talent development strategy that ensures positions in critical functions continue to be filled with adequate talent and that considers retirement plans of a large part of PREPA's labor force
 - Given challenges in hiring employees with the sufficient skills and training, the development and/or revitalization of an internal skilling program may be required to achieve proper staffing
- Results of the comprehensive labor assessment will support PREPA in staffing more optimally, supporting the achievement of labor measures and cost savings, such as the headcount reduction measure, overtime benefit reform, and medical benefit reform

Target total operating labor expense¹

\$ million



¹ Includes costs of salaries, wages, pension, benefits as well as savings from labor reform initiatives such as medical benefit reform, overtime benefit reform, pension benefit reform, and headcount reductions

Cost Reduction - Medical Benefits

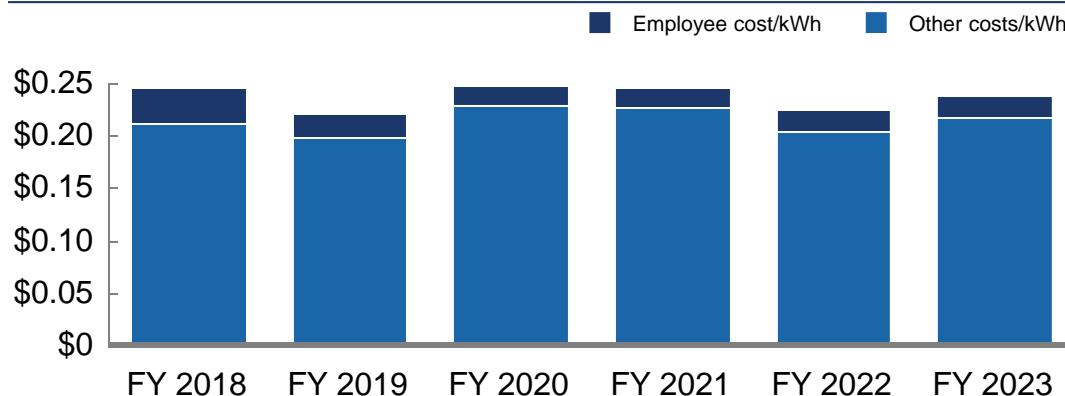
As per Commonwealth government policy, all public corporations (incl. PREPA) are to be brought into a uniform health plan

- The Commonwealth's uniform health plan will reduce employer contribution for all entities to \$125 per employee per month.
- PREPA currently self-funds employee medical benefits and spends ~\$8,900 per employee per year, or ~\$740 per employee per month, and is targeting to bring per employee medical benefit spend down
- Reducing the monthly benefit to the Commonwealth's uniform health plan will **create savings of up to \$44.3m per year** for PREPA, or ~\$615 per employee per month, starting in FY19
- Comprehensive medical benefit benchmarking should be conducted for PREPA as part of the Labor Capacity Assessment to be completed by Q2 FY19

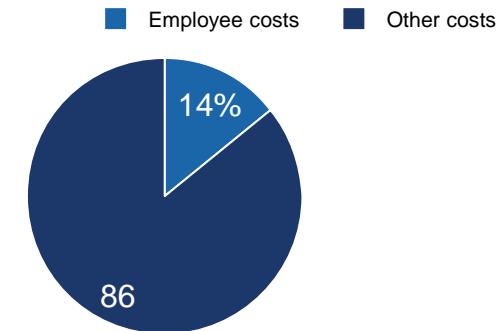
Cost Reductions - Retirements

Approximately 10% of PREPA's work force has submitted paperwork to retire with the Retirement System. If all ~600 employees retire and are not replaced, PREPA will realize employee cost savings of ~\$45M. As part of PREPA's headcount reduction measure, PREPA will track retirements and will make retirement process improvements.

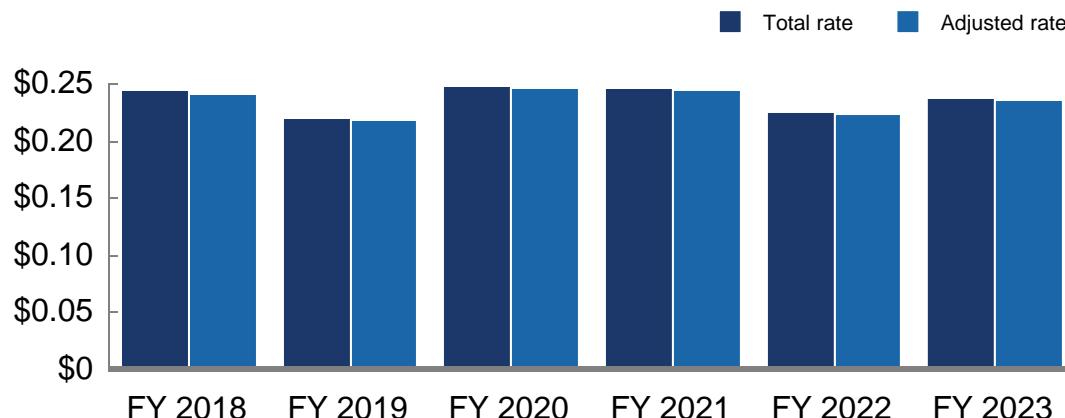
PREPA Employee Costs: Portion of Required Rate



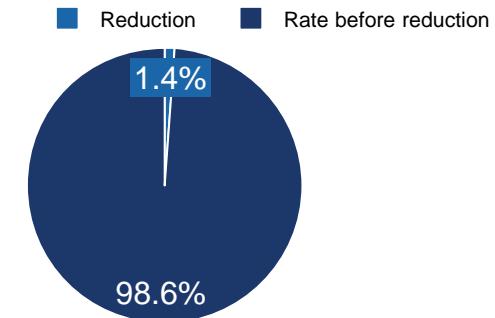
- Employee Costs contribute ~14% of PREPA's total cost structure for FY19



Rate Impact from Illustrative 10% Employee Cost Reduction



- A 10% reduction in headcount causes a ~1.4% reduction to the Total Rate in FY19



Background on Labor and Pensions

Improvements to the Collective Bargaining Agreement are necessary to operate PREPA in an efficient manner. PREPA will engage actively with the Unions to address such improvements

Labor

- PREPA's work force is over 70% unionized and belongs to 4 different Unions¹:
 - UTIER – 3,555 Employees
 - UEPI – 284 Employees
 - UITICE – 592 Employees
 - UPAE – 5 Employees
- All union contracts are arguably in effect continuing under a questionable evergreen clause; PREPA Management believes work rules and CBA articles hinder efficiency
- The union contracts include narrow work rules that, among other things, prevent PREPA management from efficiently deploying and supplementing human resources in an efficient manner
- PREPA is understaffed in certain high skilled functions, partially due to a wave of retirements in 2017 (which is spilling over into 2018)

Pension

- PREPA's pension is underfunded by \$3.6B² based on estimates from February 2018 using the 2014 Actuarial Report data
- PREPA's retirement system has differing benefits dependent on start date
- Employees who started with PREPA on or before Dec 31, 1992:
 - Paid 75% of average of highest three years of service annually
- Employees who started with PREPA after Dec 31, 1992:
 - Require 30 years of service and being older than 55 to retire with full pension benefits; Paid 75% of average of highest three years of service annually (capped at \$50k)

1 Source: PREPA Personal Directorate, as of February 7, 2018

2 Analysis ongoing; values may be updated

Labor: Right Sizing Plan Needs to Consider Critical Needs in Operational Areas

- Prior to the hurricanes, PREPA already faced a shortage in skilled workers, particularly in Generation, T&D, Customer Service and IT
- The emergency and stabilization headcounts in the chart below represent needs identified by Directorate heads for emergency and stabilization purposes unrelated to the hurricane and as of mid-August 2017
- The staffing ramp-up will be dependent on a variety of factors:
 - Constraints related to outsourcing contracts imposed by applicable law (e.g., Act 3-2017) and CBAs
 - Identifying candidates with the right skill sets
 - Impact of announcement of sector transformation
 - Unpredictable retirement patterns
 - 585 PREPA employees had filed paperwork to retire as of February 2018, per the Retirement System records
 - Employees can elect to halt the retirement process after submitting paperwork
- Headcount excluding hurricane relief workers is down to 6,107 as of mid December 2017

Directorate	Jun-17	Emergency	Stabilization	Total E&S	Ending Headcount
Generation	1,411	386	0	386	1,797
Transmission and Distribution	2,512	230	106	336	2,848
Customer Service	1,239	86	143	229	1,468
Operations Support ¹	420	65	1	66	486
Executive and General Administration ²	251	0	0	0	251
Human Resources	144	0	0	0	144
Finance	118	0	0	0	118
Planning and Environmental Protection	64	0	0	0	64
Legal	54	0	0	0	54
Governance Board	3	0	0	0	3
Total	6,216	767	250	1,017	7,233

Targeted areas for re-engineering and business process outsourcing

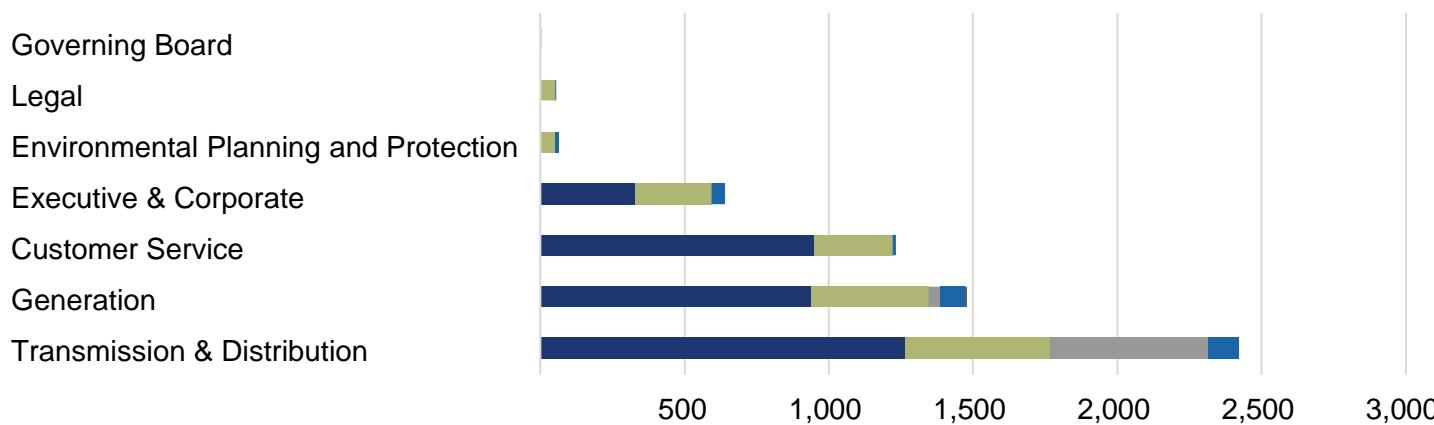
¹ June 2017 headcount by sub-division: Ground Transportation (178), Supplies (171), Ops & Infrastructure (52) and Operational Safety (19)

² June 2017 headcount by sub-division: Corporate Strategy (104), General Services (75), Retirement System (39), Executive (33)

Addressing Labor Reform

Task / Phase	Description	Target Dates
Development of Efficiency Optimization Plan	Prepare a framework for discussion with the Unions regarding the impact on labor of an the efficiency optimization plan	June 15th
Discussions with Union	Participate in discussions/negotiations with the Unions around how to accommodate the efficiency optimization plan and the needs of labor going forward	July 15th
Implement Efficiency Optimization Plan	If an agreement is reached, then implement negotiated terms	TBD
Implement Title III Restructuring Option	If unable to reach an agreement, then develop a restructuring plan under Title III and begin process to implement plan	TBD

Headcount by Union Status and Directorate



Note: The above proposed timeline is subject to change based upon the ability to reach an agreement with the Unions

Addressing Pension Reform

- PREPA's Employee Retirement System ("PREPA ERS") is designed to meet the defined-benefit pension and other post-employment benefits ("OPEB") obligations of PREPA's active and retired employees (including beneficiaries)
- The PREPA ERS is significantly underfunded and PREPA is in the process of requesting from the ERS information to update these assumptions and projections
- OPEB (\$384m accrued) is entirely unfunded as reported in PREPA's 2012 "Report of Actuary on the Other Post-Employment Benefit REVISED Valuation", revised as of October 2015
- A pension consultant was retained by PREPA and began a formal Actuarial Review process in January, 2018 to update the actuarial report, which will include: Current state of pension plan funding, and assessment of liabilities, expenses and cash flows

Develop Fact Base



Define Strategy and Execute

- Using the pension consultant's work as a fact base, PREPA will seek to work with the PREPA ERS to define and pursue a strategy to address retirement system reform
- Pension reform needs to be addressed as part of the overall transformation of the energy sector. There are a variety of ways under which legacy pension obligations can be addressed in a sustainable manner as part of energy sector transformation efforts.
- Until additional detail can be provided, PREPA estimates pension reform savings yearly beginning in FY2020 from switching from a defined benefit to a defined contribution plan and reducing benefits by roughly 10%¹

PREPA is working closely with its Financial Advisors and Counsel to obtain information needed for the Actuarial Review. As of July 2018, PREPA had received detailed census-level data from the Retirement System and has begun initial analysis of the total underfunded pension liabilities.

¹ Analysis ongoing; values may be updated

Pension Consultant Proposed Project Plan

Task / Phase	Description	Target Dates	Status
Receive data	Receives all requested data from actuary and PREPA	May 31 st	Completed
Assumption Review	Review experience studies, demographic and economic assumptions in comparison to public peers. Evaluate impact of plan freeze or reductions in benefits on assumptions.	July 5 th	Completed
Assumption Review and Plan Design Kick-off Meeting	In-person meeting to present assumption review, discuss status of replication and begin plan design/funding discussions.	July 19 th	Completed
Initial Set-up	Collect reconciled data from prior valuation. Program valuation system to replicate Pension and OPEB results. Correspond with actuary to resolve discrepancies.	July 31 st	Completed
Preliminary baseline results	Reconciliation of unfunded liability and contribution requirements from 6/30/2016 matched results to 6/30/2018, including impacts of assumption changes.	August 8 ^h	Ongoing
Sensitivity analysis	Provide sensitivity on liabilities and contribution requirements due to changes in: discount rate, salary scale, retirement, and termination.	August 22 nd	
Baseline projection, Sensitivity analysis and Plan Design Meeting	In-person meeting to present baseline projection, sensitivity analysis and continue plan design discussions.	September 3 rd – September 7 th	
Plan Design and Scenario analysis	Determine long-term impact of some or all of the following options: reducing benefits for active employees, reducing benefits for retirees, increasing contributions, increasing investment return.	October 9 th	
Plan Design Meeting	In-person meeting to present plan design options including impact on participants.	October 15 th – October 19 th	

Non-Labor/Other Operating Expense and Maintenance measures – Overview

4 Non-Labor/Other Operating Expense

Measure	Description	Value at stake, \$ million	
		FY2019	FY2019-2023
Initiatives to be defined by PREPA		TBD	TBD

5 Maintenance

Measure	Description	Value at stake, \$ million	
		FY2019	FY2019-2023
Initiatives to be defined by PREPA		TBD	TBD

Sizing of measure values to be completed by Q2FY19 and reported to FOMB as part of ongoing implementation reporting

Performance Improvement Activities (WP – 180)

PREPA along with its Financial Advisors has initiated a team based Performance Improvement Initiative, known as WP-180, focused on evaluating operational and contractual business practices of the organization with the goal of identifying opportunities to increase operating efficiency and reduce costs. Teams of employees and advisors have been actively reviewing the operations of PREPA's directorates (i.e. Transmission/ Distribution, Generation, Administrative, Customer Relations, HR, etc.) as well its principal cost centers (e.g. Fuel and Power Purchasing). Initiatives identified by each team are evaluated, scoped, and prioritized with detailed execution plans developed that ensure implementation and monitor performance. It is anticipated that all existing and future performance improvement efforts will be analyzed and validated through the Work Plan 180 process.

Work Plan 180 Performance Improvement Goals

Substantially improve employee safety to levels defined as top decile performance as recognized by OSHA standards

Improve environmental compliance and achieve zero notices of violation

Maximize efficiency of labor efforts and eliminate unproductive processes or work rules

Improve cost competitiveness of the organization

Develop formal corporate processes that analyze spend and define the most effective utilization of available funds

Improve reliability performance of the corporate assets

Sell off non-core assets (PREPA Net) to be reviewed by its holding company board (i.e. PREPA Holdings)

See Appendix for Work Plan 180 background and timeline

PREPA Identified Operational Improvement Initiatives

Certain performance improvements have begun and will continue during the 18-month period, but full potential of opportunities identified will require or be optimized by privatization. **All initiative sizing is to be completed by Q2 FY19 with a full report on sizing and implementation plan to realize savings to be presented to the FOMB in writing by Q2 FY19 with appropriate categorization.** Operational savings from WP 180 will inform budget revisions and future fiscal plans.

Category	Opportunity Type	Initiative	Stage	18 Month* ⁷	Initiative Sizing
Non-Labor Opex	Productivity Improvement	Optimize Procurement and Logistics	Review / Analysis	Yes	TBD
Non-Labor Opex	Productivity Improvement	Inventory Management	Review / Analysis	Yes	TBD
Labor Opex	Productivity Improvement	CBA Work Rules	Review / Analysis	Yes	TBD
Non-Labor Opex	Productivity Improvement	Vegetation Management	Underway	Yes	N/A
Maintenance	Productivity Improvement	T&D Maintenance Execution	Underway	Yes	N/A
Revenue	Current Cash Expense	Collections - Credit Card Fee Cap	Review / Analysis	Yes	\$2
Non-Labor Opex	Current Cash Expense	Business Processing Outsourcing	Review / Analysis	Yes	\$5 - 10
Labor Opex	Current Cash Expense	Staffing Evaluation / Right Sizing	Underway	Yes	\$15 - 20
Revenue	Current Cash Expense	Non-Technical Losses	Underway	Yes	\$15 - 20
Revenue	Current Cash Expense	Account Maintenance and Billing Quality	Underway	Yes	\$3
Labor Opex	Current Cash Expense	Employee Benefits Expense Optimization	Underway	Yes	\$10 - 15 ⁵
Revenue	Current Cash Expense	Behind the Meter	Underway	Yes	TBD
Total Non-F&PP Current Cash Expense					\$75-95
F&PP	Current Cash Expense	Fuel Sourcing	Underway	Yes	\$5 - 10
F&PP	Current Cash Expense	Dispatch Improvements	Underway	Yes	\$25 - 30
F&PP	Current Cash Expense	Increased LNG Usage	Underway	Yes	\$20 - 25
F&PP	Current Cash Expense	Public Lighting Outsourcing/P3	Review / Analysis		\$25 - 40
F&PP	Current Cash Expense	Conventional PPOA Price Renegotiation	Review / Analysis		\$100 - 130
Total F&PP Current Cash Expense					\$175 - 235
Non-Labor Opex	Future Cost Increases	Fleet Management Reorganization	Review / Analysis	Yes	TBD
Labor Opex	Future Cost Increases	Pension Obligation Reform	Review / Analysis	Yes	TBD
Non-Labor Opex	Future Cost Increases	Smart/Micro Grids, Automated Systems	Underway		TBD
F&PP	Future Cost Increases	Renewable PPOA Price Renegotiation	Underway	Yes	\$45 - 55
F&PP	Future Cost Increases	Reduce Forced Outages, System Heat Rate	Underway		\$90 - 120
F&PP	Future Cost Increases	New LNG Supply Permits and Funding	Underway	Yes	\$200 - 300
Total Avoided Future Cost Increases					Total 585-805

Revenue recovery opportunities from behind the meter generation exist but require changes to rate structure

*Achievement possible within 18-month transformation period, all other initiatives are likely to require privatization

1 Subject to further diligence. Sizing of potential impact is preliminary and provided solely for illustrative purposes (as discussed with FOMB advisors). 2 Subject to material change and revisions. The initiatives are subject to varying levels of execution risks due to a series of affecting factors, including but not limited to required actions and results that are outside of PREPA's control. 3 Financial impact is subject to material change. Activities flagged as "TBD" are in the process of being sized. 4 A number of the initiatives included would impact the fuel/purchased power cost items and thus do not directly impact free cash flow. 5 Savings from moving to the Commonwealth's uniform health plan are estimated separately on prior pages 6 WP180 initiatives will be categorized as part of Revenue, F&PP, Labor Opex, Non-Labor Opex, and maintenance expense measures and sized and reported on as part of implementation reporting requirements



PREPA is Approaching 1.5 cents / kWh Savings

- Up to \$130 million of improvement opportunities were identified in non-fuel & purchased power operating expense areas (i.e. 1 cent / kWh in FY 2023) through a bottoms-up analysis of the organization and work force
- PREPA has commenced “Work Plan 180” to discover and qualify additional improvements, further validate already identified opportunities, and develop initial execution plans for implementation
- Since FY 2012, PREPA has reduced its Labor O&M expenditure by over \$200 million annually, and anticipates realizing an additional reduction of \$40 million annually beginning FY 2019 due to pending retirements
- Emphasis is being placed on employee productivity, customer service quality, and long-term power system infrastructure improvements through status quo operational initiatives and energy sector transformation

Recent Updates: Near-Term Operational Improvements identified through WP-180

- PREPA has identified and executed on certain performance improvement initiatives, and commenced the Work Plan 180 initiative discovery and implementation process on February 23, 2018, to enhance efforts to reach the 1.5 cent / kWh target.

Operations: On January 23, 2018, PREPA shut down Aguirre’s combined cycle unit and Cambalache’s peaking units for fuel saving purposes

- Preliminary fuel savings estimate is \$28M annually based on more efficient utilization and dispatching lower cost generation plants

Fuel Mix: As of the week ending February 24, 2018, PREPA increased LNG consumption at the Costa Sur plant to lower overall fuel costs

- Preliminary fuel savings estimate is \$24M annually based on lower priced fuel source

See Appendix for Work Plan 180 background and timeline

IX. Post-Certification Reporting



Puerto Rico
Electric Power
Authority

Post-certification Reporting Requirements

Reporting cadence:	Reporting to FOMB:
Weekly	Every Wednesday
Bi-Weekly	On the 13 th or 27 th of each month; if not a business day, then the following business day
Every 4 weeks	Every 4 th Friday starting March 9 th , 2018
Monthly	15 th of every month; if not a business day, then the following business day
Quarterly	1 st day of every fiscal quarter
Annually	Starting November 14, 2018 and subsequently at the beginning of each fiscal year

All reporting to the FOMB done in writing, on an NDA basis

Post-certification – PREPA Reporting Requirements

Requirements end upon exit from Title III

Resiliency & Resource Planning	Report type	Detail	Target date
	Integrated Resource Plan	Begin and complete new IRP in calendar year 2018	<ul style="list-style-type: none"> ▪ New process by end of June 2018; complete IRP and filing with PREC by Oct 2018
	New generation plan	Overview of generation to be added, with detailed information for each generation facility including type of generation, capacity, geography, cost to develop, rationale for new investment over upgrading the grid	<ul style="list-style-type: none"> ▪ To be complete by Q2 FY19
	Near-term generation RFP	Launch near-term RFP for new generation by end of June 2018	<ul style="list-style-type: none"> ▪ June launch; projects operational by Q4 FY2019
	Grid modernization plan	Grid modernization plan should provide an overview of the major investment categories and projects PREPA is considering to deliver reliable, resilient power	<ul style="list-style-type: none"> ▪ To be complete by Q2 FY19
	Mutual Aid MOUs	PREPA must sign memoranda of understanding (MOUs) to document goodwill with other utilities as non-binding agreements for mutual aid	<ul style="list-style-type: none"> ▪ MOUs to be in place by Q2 2018
Financial & Operational	Work Plan 180 tracking	In addition to WP180 initiatives specified on prior pages, provide a summary of Work Plan 180 findings. This report is to size annual savings targets for FY19-23 and should include milestones as well as any investment required towards implementation and capture of savings.	<ul style="list-style-type: none"> ▪ Monthly status reporting on all initiatives
	Contract evaluation	Evaluate all fuel contracts, PPOAs, restoration, consulting, and other existing and new contracts to determine long-term strategic corporate benefit, or potential options for renegotiation or rejection under Title III	<ul style="list-style-type: none"> ▪ Regular status reporting ▪ Final determination on all contracts by Q3 FY19

Post-certification – PREPA Reporting Requirements

Requirements end upon exit from Title III

Financial & Operational

Reports	Detail	FOMB reporting cadence	Public reporting deadlines
Liquidity tracking	13-week cash flow report including all receipts and disbursements, accounts receivable, accounts payable, and restoration report as outlined in Commonwealth loan agreement	<ul style="list-style-type: none">Weekly until restructuringBi-weekly thereafter	Monthly upon FP certification
Budget to actuals	Tracking of budgeted to actual cash flow per budget certification agreements with FOMB package to: <ul style="list-style-type: none">Include explanation for material variances (>10% and \$30 million)Include I/S in the reporting packageProvide monthly reports required pursuant to the Loan Agreement¹Provide quarterly budget reporting	<ul style="list-style-type: none">Every 4 weeks starting after budget certificationQuarterly written budget variance reporting within 45 days of quarter close	Monthly: headline I/S numbers consistent with prior public reporting on website; Annually: B/S reported; Begin upon budget cert.
Operational Metrics Reporting	Reporting on operational performance metrics, including: <ul style="list-style-type: none">Average actual incurred rates by customer type broken down into cost driver components, e.g. F&PP, Base Rate, CILTMonthly SAIDI, SAIDI, and CAIDI by customer typeSummary of all critical services (e.g. major industrial, commercial customer locations) without power for >48 hoursOHSA events	<ul style="list-style-type: none">Monthly	Monthly posted to PREPA website

All reporting to the FOMB done in writing, on an NDA basis

Revenue measures – reporting and milestone requirements

Measure	Forecasted impact, \$ million					Reporting	Milestone and dates
	FY2019	FY2020	FY2021	FY2022	FY2023		
① Revenue							
CILT excess consumption collection	TBD	TBD	TBD	TBD	TBD	<p>Monthly: total collections and accounts receivable by customer type (including municipalities) by age, progress on collections; # of accounts disconnected; accounts receivable in current, 30, 60, 90, and 120+ day timeframes</p> <p>Pending sizing assessment</p>	<ul style="list-style-type: none"> Identify non-paying entities by 8/31/18 Report on collections to FOMB by 10/31/18 No net increase in AAR¹ month-to-month starting FY19 Reduce aged AR that is aged by one year or less to zero by Q1 FY20
Current accounts receivables collection	TBD	TBD	TBD	TBD	TBD		
Aged accounts receivables collection	TBD	TBD	TBD	TBD	TBD		
Non-technical loss reduction	TBD	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> Initiative, savings schedule and milestones to be developed by Q2 FY19 	<ul style="list-style-type: none"> -
Total, \$ million	TBD	TBD	TBD	TBD	TBD		

Additional Reporting Requirements	Detail	FOMB reporting cadence / reporting deadline
Opportunity sizing assessment	Written report across CILT collection, current A/R and aged A/R collection. Report is to size annual savings and recovery targets for FY19-23.	<ul style="list-style-type: none"> By Q2 FY19

All reporting to the FOMB done in writing, on an NDA basis

F&PP measures – reporting and milestone requirements

Measure	Forecasted impact, \$ million					PREPA Implementation reporting to FOMB	Milestones and dates
	FY2019	FY2020	FY2021	FY2022	FY2023		
② Fuel & Purchased Power							
Economic Dispatch	44.3	17.8	24.4	79.4	54.0	<ul style="list-style-type: none"> Weekly: Generation (MWh by asset); Fuel burn (BOE) & fuel cost (\$) by generating asset by fuel type 	\$44.3M savings realized by end of FY19
Increased LNG Utilization	40.5	32.9	49.2	54.8	47.1	<ul style="list-style-type: none"> Weekly: LNG plants downtime Monthly: operational progress on plant conversion 	100% LNG generation of San Juan 5 and 6 by April 2019
Purchased Power - Renewable - Price Improvement		39.4	40.2	40.9	41.2	<ul style="list-style-type: none"> Monthly: Confidential reporting to FOMB 	\$40M annual savings realized during FY20
Purchased Power - Conventional - Price Improvement				110.0	110.0	<ul style="list-style-type: none"> Monthly: Confidential reporting to FOMB 	\$110M annual savings realized during FY21
Fuel Procurement Contracts - Price Improvement	Pending sizing assessment					<ul style="list-style-type: none"> Monthly: Confidential reporting to FOMB One-time: Fuel Procurement Strategy 	Savings targets to be set via Fuel Procurement Strategy due by Q2 FY19
Commercial Loss Reduction ¹		21.9	22.0	21.0	22.3	<ul style="list-style-type: none"> Monthly: Energized to billed gap, non-technical loss 	<ul style="list-style-type: none"> 1% reduction in commercial loss cost by FY20 Energized to billed gap consistently under 15% since March 2018
Total, \$ million	84.8	112	135.8	306.1	274.6		

¹ Estimates include technical and non-technical loss reduction. These effects are to be disaggregated in future implementation reporting.

All reporting to the FOMB done in writing, on an NDA basis



Labor operating expense measures – reporting and milestone requirements

Measure	Forecasted impact, \$ million					PREPA Implementation reporting to FOMB	Milestones and dates
	FY2019	FY2020	FY2021	FY2022	FY2023		
③ Labor Opex							
Medical Benefit Reform	44.4	44.4	44.4	44.4	44.4	▪ Monthly: progress on implementation of CW uniform health plan	▪ Complete implementation in FY19
Pension Benefits Reform		58.0	58.0	58.0	58.0	▪ Monthly: progress on pension liability sizing	▪ Initial pension liability sizing to be complete by Aug 2018 and finalized by Oct 2018
Overtime Benefit Reform	10.0	10.0	10.0	10.0	10.0	▪ Monthly: number of overtime hours utilized and average per hour overtime payrate	▪ Capacity assessment to be launched in August 2018 and be completed by Q2 FY19
Headcount Reduction	21.2	21.2	21.2	21.2	21.2	▪ Monthly: # of temporary and permanent employees ¹ ; retirement backlog by time since request	▪ Technology solution to be deployed by July 15 2018; significant backlog reduction by Oct 2018
Christmas Bonus Removal	3.4	3.4	3.4	3.4	3.4	▪ N/A	▪ No bonus to be paid starting FY19
Rightsizing	Pending capacity assessment					▪ Future reporting to be set in Q2 FY19 based on findings of capacity assessment; revised target dates for Union negotiations by Q2 FY19	▪ Capacity assessment to be launched in August 2018 and be completed by Q2 FY19
Total, \$ million	77.9	135.9	135.9	135.9	135.9		

All reporting to the FOMB done in writing, on an NDA basis

1 By directorate and rank, including written explanation of ending monthly variance



Puerto Rico
Electric Power
Authority

Non-Labor/Other Operating Expense measures – reporting and milestone requirements

Measure	Forecasted impact, \$ million					Reporting	Milestone and dates	
	FY2019	FY2020	FY2021	FY2022	FY2023			
④ Non-Labor/Other Operating Expenses								
Initiatives to be defined by PREPA	Pending sizing assessment						<ul style="list-style-type: none"> ▪ Initiatives, savings schedule and milestones to be developed by Q2FY19 	
Total, \$ million	XX	XX	XX	XX	XX			

Additional Reporting Requirements	Detail	FOMB reporting cadence / reporting deadline
Opportunity sizing assessment	Written report to assess identify and size savings initiatives. Report is to size annual savings targets for FY19-23 and should include milestones towards implementation and capture of savings.	<ul style="list-style-type: none"> ▪ By Q2 FY19

All reporting to the FOMB done in writing, on an NDA basis

Maintenance measures – reporting and milestone requirements

Measure	Forecasted impact, \$ million					Reporting	Milestone and dates
	FY2019	FY2020	FY2021	FY2022	FY2023		
⑤ Maintenance Expenses							
Initiatives to be defined by PREPA	XX	XX	XX	XX	XX	Initiatives, savings schedule and milestones to be developed by Q2FY19	-
Total, \$ million	XX	XX	XX	XX	XX		

Additional Reporting Requirements	Detail	FOMB reporting cadence / reporting deadline
Opportunity sizing assessment	Written report to assess identify and size savings initiatives. Report is to size annual savings targets for FY19-23 and should include milestones towards implementation and capture of savings.	▪ By Q2 FY19

All reporting to the FOMB done in writing, on an NDA basis

Appendix



Puerto Rico
Electric Power
Authority

CILT is a Common Construct for Mainland Public Power Utilities

According to an American Public Power Association study of 176 public power utilities, in 2014, public power utilities contributed 5.6% of electric operating revenues back to the communities they serve

88% of U.S. public power utilities with over 50,000 customers make PILT (payment in lieu of taxes) or similar payments to government entities

Methods Used to Calculate Payments in Lieu of Taxes			Categories of Payments and Contributions to State and Local Governments	
	Percentage of Utilities	Number of Utilities		Percentage of Total
% of Gross Electric Operating Revenue	22%	29	Other Taxes and Fees	43.1%
Assessment of Electric Utility and City Budget	18%	23	Payments in Lieu of Taxes	35.6%
Property Tax Equivalent	15%	19	Gross Receipts Tax	16.1%
Flat Amount Paid Annually	12%	16	Free or Reduced Cost Electric Services	4.1%
Charge per Kilowatt-hour Sold	9%	11	Other, including Equipment and Materials	0.6%
% of Net Utility Plant in Service	4%	5	Use of Employees	0.5%
% of Income (Net, Operating, or Total)	2%	3	Total	100.0%
Other/Did not Indicate	18%	23		

SOURCE: 2016 APPA Study – Public Power Pays Back: Payments and Contributions by Public Power Utilities to State and Local Governments in 2014

Comparison of U.S. Public Power Utilities – CILT

PREPA FINANCIALS FROM FY16

	PREPA ¹	<\$1bn	\$1-2bn	>\$2bn
Annual Revenue	\$3.23bn	\$645.27m	\$1.29bn	\$3.16bn
Payments in Lieu of Taxes (or other payments / services to government)	\$76.06m	\$44.37m	\$62.51m	\$342.1m
Payments to Government as % of Revenue	2.36%	7.52%	5.15%	11.07%
Sample Size	-	5	6	3

1 FY2016 figures

SOURCE: BAML Research

Work Plan 180 – Further Explained

Objective

- Initiate a detailed company-wide operational efficiency initiative to evaluate all aspects of the business to determine cultural, organizational, and process conditions that inhibit efficiency and success.
- Once the evaluation process is completed, a comprehensive plan of improvement initiatives will be developed, analyzed, and valued with the intention of forming an organizational playbook (Business Plan) utilized by the management team for execution and monitoring of business performance.

Directorate Level Approach

- A Steering Team will be formed and led by Strategic Advisors with participation of senior PREPA management that will be responsible for guiding the re-engineering of the organization and managing specific project teams in their efforts to evaluate and improve performance in major operational divisions.
- Four Project Teams will be formed to address the following areas of the organization:
 - Generation, T&D, Customer Service & Corporate, and Fuel & Power Purchasing

Project Teams

- Each Project Team will consist of Strategic Advisors and PREPA staff members who possess in-depth knowledge of the specific organization and a strong desire to improve performance and drive the organization to higher standards of performance. Generally, the teams will consist of six to eight individuals with one specific individual assigned to provide financial analysis support.

Responsibilities

- Evaluate existing division work processes and develop initiatives to address inefficiencies.
- Determine areas of the organizational structure where changes to work assignments, rules, and practices will improve efficiency.
- Evaluate financial planning process changes that will improve asset performance.
- Analyze external agreements/contracts for a determination of economic market competitiveness.
- Determine if improvements in Technology utilized will improve efficiency and provide recommendations for implementation.



Work Plan 180 – Timeline

Weeks 1-2

- Provide details of initiative to executive management and receive approval to proceed
- Select Steering Team members and conduct first meeting to educate and seek input from committee
- Steering Team will define each Project Team and solicit leadership to participate in the effort
- Conduct initial meeting of all Project Teams to educate and seek feedback from group on initiative process, timelines, expectations, and deliverables
- Steering Team meeting to discuss feedback from Project Teams and determine if modification to the Initiative Plan is required

Weeks 3-5

- Project Team Workshops
(Execute efforts to address the Project charge and responsibilities)
- Executive management is provided an update on Initiative progress and status
- Project Teams provide initial status update on progress to Steering Team (initial identification of opportunities, financial impacts, execution plan, and process implementation for each initiative)
- Steering Team provides feedback and direction to each team along with expectations for final project plan

Weeks 6-7

- Project Teams incorporate feedback into their recommendations and finalize Business Plan
- Project Team recommendations are incorporated into a Corporate Initiative Business Plan
- Steering Team reviews Business Plans and submits to executive management for approval
- Executive management approves Business Plans and provides authorization for implementation

Weeks 8+

- Business Plan initiatives are initiated
- Steering Team and Project Teams continue to meet to monitor performance improvement
- Initiatives Modifications to Business Plan initiatives will be based on changes to the performance of the organization



Roadmap for Recovery and System Resilience

PREPA has developed a roadmap to protect critical loads and enhance overall system reliability through enhancement of system interconnectivity, improvements to infrastructure design and construction criteria, and establishment of electric system islands (a.k.a. micro-grids).

- Projects must meet at least three fundamental planning, design, and operational criteria:
 - Enhance system stability and power service continuity during a major atmospheric event
 - Contribute to black-start capability of the electrical system
 - Improve power system restoration process and capability
- Infrastructure projects were identified to increase the resilience of the electrical grid
 - Key underground 115 kV and 38 kV transmission circuits, connecting critical loads (e.g. Metro Zone)
 - Gas Insulated Substations (GIS) to replace old, unreliable oil insulated substations
 - Existing transmission line inspections, maintenance, and reconstruction
 - Electrical system islands that isolate critical loads and / or have key infrastructure in place
 - Requires black start capability
 - Sufficient conventional generation, renewable generation, or both, along with adequate controls to operate reliably and independently until normal operation conditions return
 - Existing generation, such as existing 20 MW turbines, hydroelectric plants, private generation, or new generation can be used to power these islands

Performance Metrics – Function & Criteria

Reliability	Resiliency	Affordability	Safety	Service
Objectively Measurable	Metric should: <ul style="list-style-type: none">▪ Have a clear definition▪ Be capable of reliable and consistent measurement▪ Be verifiable and not be subject to manipulation or litigation			
Controllable by the Utility	<ul style="list-style-type: none">▪ Reflect the actions and performance of the utility measured▪ Be indicative of performance and performance improvement▪ Adjust or be normalized for exogenous factors where practical			
Promote Policy Goals	<ul style="list-style-type: none">▪ Indicate achievement of one or more of the overall goals of the transformation or the public policy of the Government of Puerto Rico▪ Be material▪ Not be duplicative			



Potential Performance Metrics

Delivery System Reliability

- System and district interruption statistics – SAIFI, SAIDI, CAIFI, CAIDI
- Customers experiencing more interruptions than targets
- Frequency of transmission outages / contingencies affecting customers or dispatch

Generation Reliability & Efficiency

- Unit availability (by franchise holder and unit)
- Forced outage rate (by franchise holder and unit)
- Environmental compliance

Resiliency

- Critical infrastructure protection / hardening (plan compliance)
- Preventive maintenance backlog
- Critical customer support (monitoring, redundancy, hardening)
- Emergency recovery plan compliance

Safety

- OSHA recordable events
- OSHA citations / violations
- Customer injury rates



Potential Performance Metrics

Affordability

- Delivered price (normalized; metrics will vary for different types of utilities)
- Dispatch efficiency
- Uncollectible balances
- Days of sales outstanding, by class and private / government
- Non-technical losses / UFE
- Theft / tampering recoveries
- Rate of successful completion of payment plans

Customer service functions

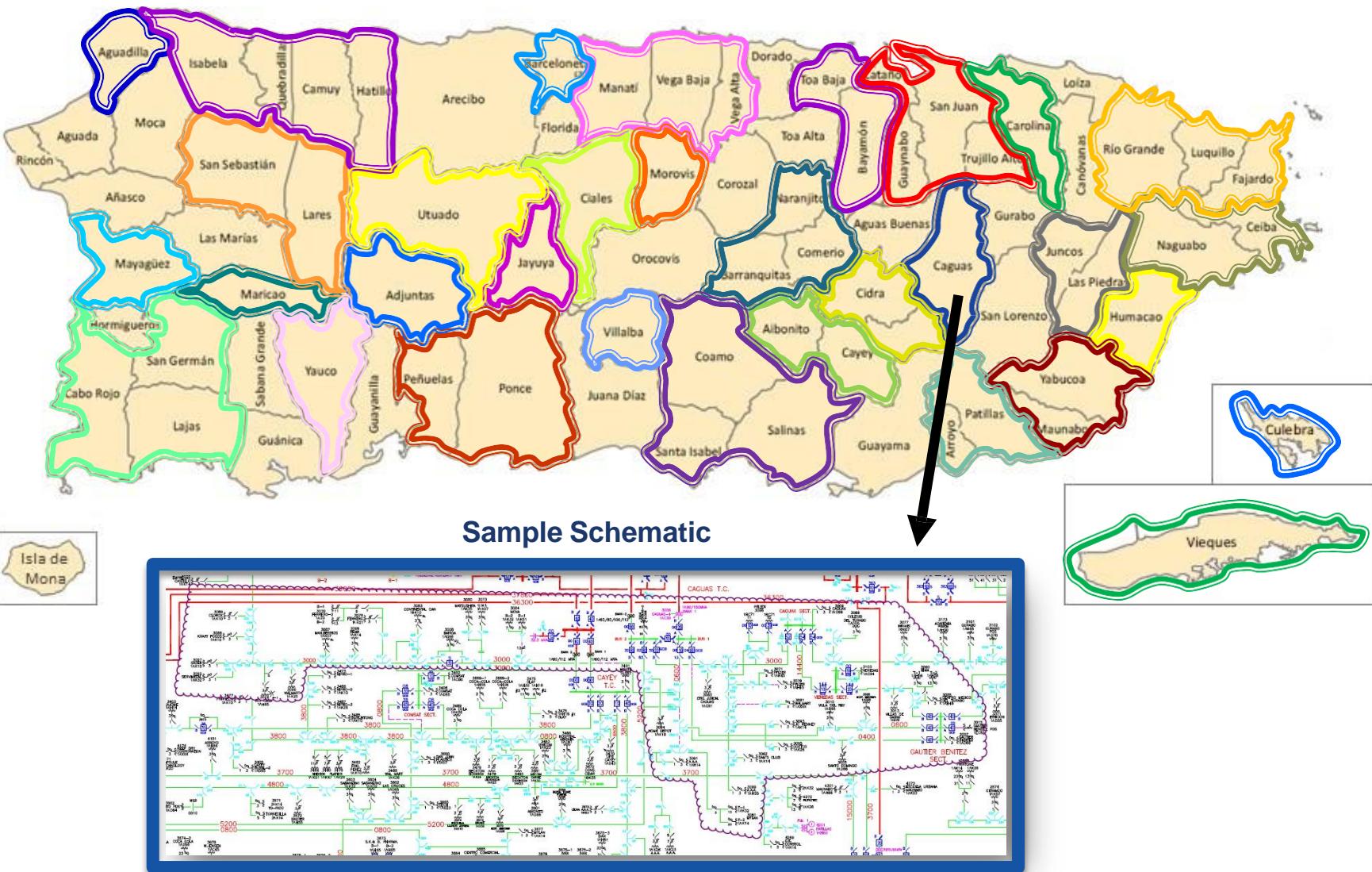
- Timely metering reading and billing rate
- Actual vs estimated reading rate (AMI and manual)
- Customers on AMI/AMR
- Call center time to answer / physical office wait times
- Time to respond to service requests (by class / district as appropriate)
- Time to respond to billing / service inquiries

Regulatory Compliance / Performance

- Compliance with franchise conditions (completion and cost)
- Compliance with approved investment plans (completion and cost)
- Time to process interconnection requests (excluding delays attributable to customer)



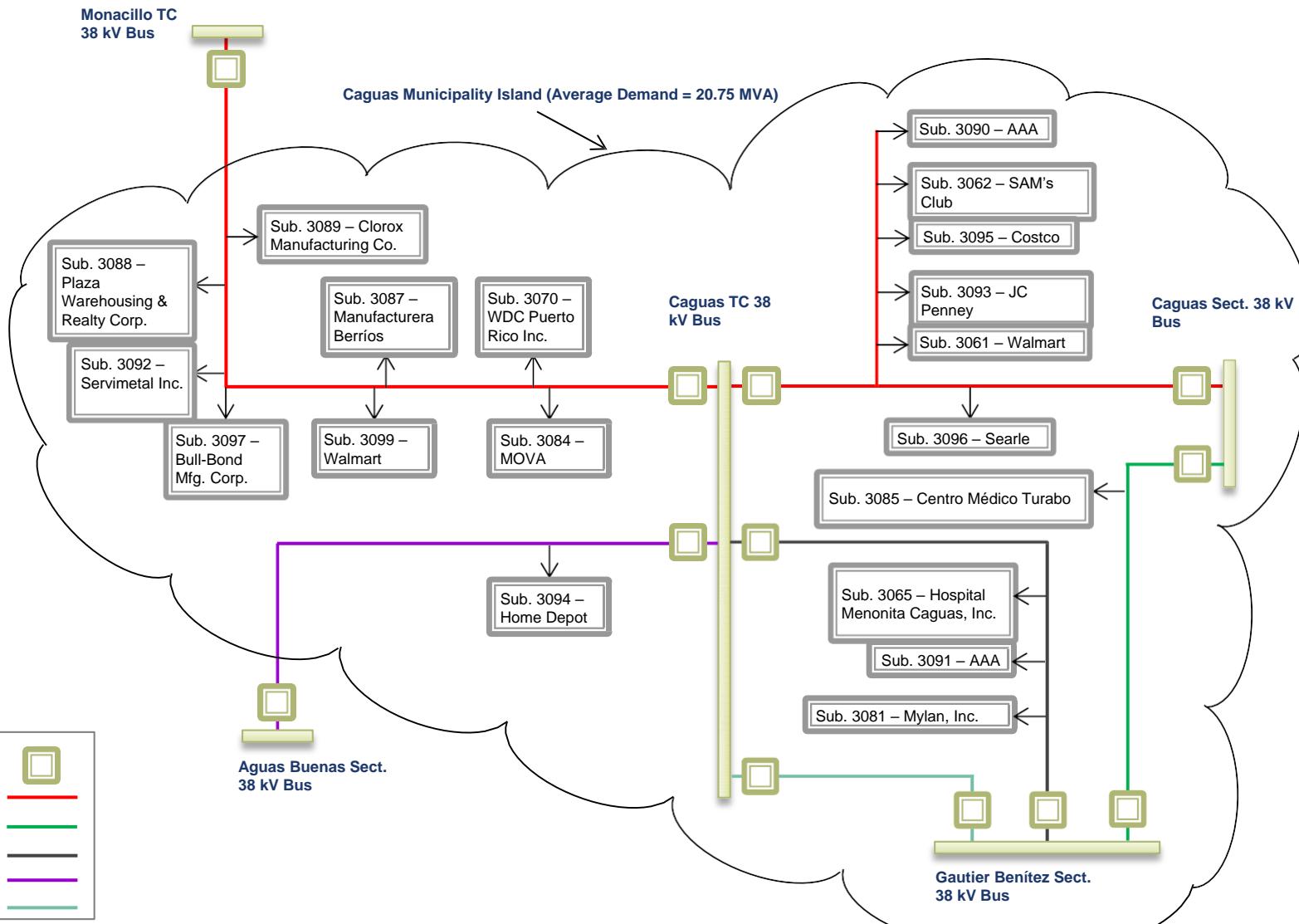
Electric System Islands Identified



SOURCE: PREPA Recovery and System Resiliency Roadmap



Simplified Electric System Island Schematic Sample



SOURCE: PREPA Recovery and System Resiliency Roadmap

Select Identified Microgrids

Area	Hospitals	Water Supply	Government	Industrial	Commercial	Piers	Avg. MVA Demand
Metropolitan Zone (San Juan, Guaynabo, Cataño, Trujillo Alto)	X	X	X	X	X	X	114.8
Metropolitan Zone (Bayamón, Toa Baja)	X			X	X		25.5
Metropolitan Zone (Carolina)	X			X	X		35.3
Caguas	X				X		20.8
Juncos / Las Piedras					X		49.7
Humacao	X			X	X		28.7
Mayagüez	X			X	X		23.1
Maricao				X	X		5.6
San Sebastián / Lares				X	X		29.7
San Germán / Cabo Rojo / Lajas	X			X	X		8.6
Aguadilla				X	X		10.1
Quebradillas / Isabela / Camuy / Hatillo	X				X		7.1
Vega Alta / Vega Baja / Manatí	X			X	X		45.4
Barceloneta				X			25.2
Fajardo / Luquillo / Río Grande	X			X	X		16.3
Naguabo / Ceiba	X	X	X		X	X	18.0
Yabucoa / Maunabo	X			X	X		21.6
Barranquitas / Naranjito / Comerío	X				X		27.6
Cayey / Cidra		X		X			26.0
Cayey / Aibonito	X			X	X		8.9
Ponce / Peñuelas	X			X	X		56.6
Salinas / Santa Isabel / Coamo	X				X		10.9
Patillas / Arroyo	X				X		17.9
TOTAL							633.4

SOURCE: PREPA Recovery and System Resiliency Roadmap

